User's Guide

LocateXL Help

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Introduction 1

LocateXL is a geocoder that is an add-in to Microsoft Excel 2007 or 2010 which works with a mapping add-in called SpatialXL.

LocateXL is made up of the following:

- Quick geocoder
- Batch geocoder
- Reverse geocoder
- SpatialXL mapping and analytics
- Geocode reference data is included

Currently LocateXL is available for the South African market.

Limited data exists in African countries, so please request a specific country should you want to geocode outside of South Africa.

LocateXL is developed and owned by PrimeThought Software Solutions.

Company website: www.PrimeThought.biz
Product website: www.LocateXL.com
Platform product website: www.SpatialXL.com

To get regular updates on LocateXL, visit the product website at www.LocateXL.com

Follow our tweets on twitter PrimeThoughtSoftware @PrimeThought South Africa

"Like" the **PrimeThought** page on facebook

LinkedIn http://www.linkedin.com/company/prime-thought-software-solutions

and all our Demo and Training Videos are on YouTube

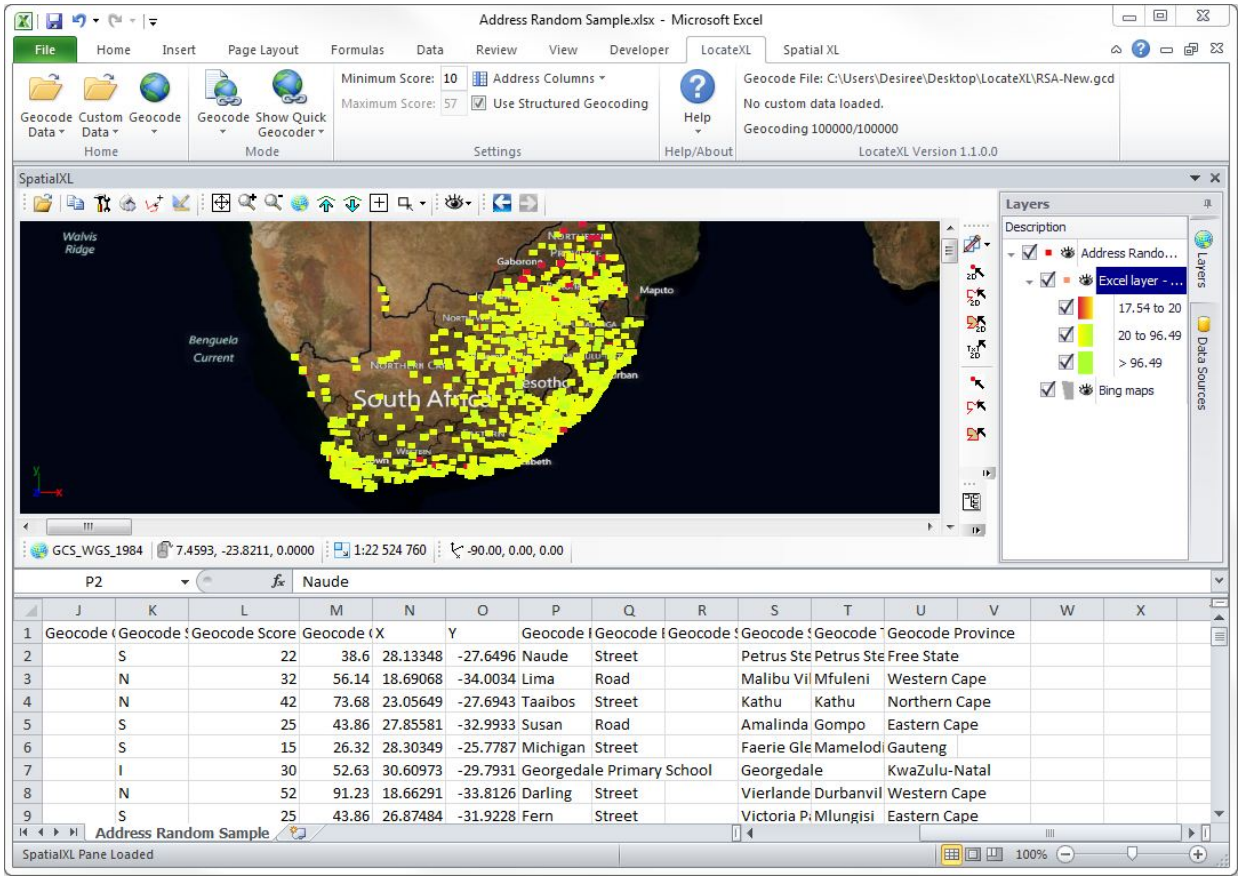
YouTube video:	Placing 5000 addresses on a map in under 5 minutes
YouTube video:	How to download and install LocateXL (and SpatialXL)
YouTube video:	LocateXL: Quick Geocoder in Excel
YouTube video:	LocateXL: Geocode town centric addresses in Excel
YouTube video:	LocateXL: Geocode road centric addresses in Excel
YouTube video:	LocateXL: Unstructured Geocoding in Excel
YouTube video:	LocateXL: Classification and Complex Geocoding in Excel
YouTube video:	LocateXL: Reverse Geocoding in Excel

SpatialXL is an add-in to Microsoft Excel 2007 or 2010, which gives Excel full mapping or GIS functionality.

SpatialXL is needed if you would like to view the data against a map background, because LocateXL utilises the mapping environment of SpatialXL to place geocoded points and to check that geocodes are

done correctly against a map background.

When you purchase the LocateXL product you usually have to either purchase the SpatialXL product alongside or you will get a free copy of SpatialXL depending on the structuring of the particular sale.



	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1	Geocode	Geocode	Geocode Score	Geocode	X	Y	Geocode	Geocode	Geocode	Geocode	Geocode	Geocode Province			
2		S	22	38.6	28.13348	-27.6496	Naude	Street		Petrus Ste	Petrus Ste	Free State			
3		N	32	56.14	18.69068	-34.0034	Lima	Road		Malibu Vil	Mfuleni	Western Cape			
4		N	42	73.68	23.05649	-27.6943	Taaibos	Street		Kathu	Kathu	Northern Cape			
5		S	25	43.86	27.85581	-32.9933	Susan	Road		Amalinda	Gompo	Eastern Cape			
6		S	15	26.32	28.30349	-25.7787	Michigan	Street		Faerie Gle	Mamelodi	Gauteng			
7		I	30	52.63	30.60973	-29.7931	Georgedale Primary School			Georgedale		KwaZulu-Natal			
8		N	52	91.23	18.66291	-33.8126	Darling	Street		Vierlande	Durbanvil	Western Cape			
9		S	25	43.86	26.87484	-31.9228	Fern	Street		Victoria P	Mlungisi	Eastern Cape			

Important: Please use a download manager such as Free Download Manager at http://www.freedownloadmanager.org to assist with the download. This will give you a much quicker download and will ensure better quality and less corrupted downloads, especially if you have a slow internet link.

Prerequisites:

1. Admin privileges (speak to IT for this).
2. Excel 2007 or 2010 already installed.

You have to download and install both **SpatialXL** and **LocateXL**. Here are the instructions:

To watch the video on How to download and install LocateXL (and SpatialXL) click on this link to view it in YouTube

To download and install SpatialXL you do the following:

1. Go to http://www.PrimeThought.biz and **register** on the website or **log in** if you have already registered.
2. Once logged in, you will see the **Download** section on the left hand side as one of the tabs.
3. Go to the Download section and download **SpatialXL.exe**.
4. If you have already installed a prior version of SpatialXL, please go to Add and **Remove Programs** in your Control Panel, and remove SpatialXL.

5. Then run **SpatialXL.exe**, following the prompts.
6. When successfully installed, open Excel 2007 or 2010 and go the the **SpatialXL ribbon**.
7. Open **About SpatialXL** by clicking on the button and then click on **Update License**.
8. Click Load license from file and choose the **SpatialXLLicense.lic** (or other named license file for SpatialXL that you received from PrimeThought - it will have the extension .lic) to bring in the key of the license. Then when you click OK, your license will be valid and you will be able to use SpatialXL.
9. To test that SpatialXL is working, go to the Show Spatial Pane button in the SpatialXL Ribbon and make sure that your Spatial Pane appears. If it does you have correctly installed and license SpatialXL.
10. Close Excel and continue to the download and installation of LocateXL.

To download and install LocateXL you do the following:

1. To download LocateXL you have to get a download link from PrimeThought Software Solutions. This might be in the form of an ftp site, or an internet website.
2. You would generally download two files: LocateXL.exe AND RSA-new.gcd (or another gcd file). You could also download the gcc files called StreetCentric.gcc and TownCentric.gcc.
So in other words you might get links that looks like this: http://www.locatexl.com/temp/LocateXL.exe, http://www.locatexl.com/temp/RSA-new.gcd, http://www.locatexl.com/temp/StreetCentric.gcc and http://www.locatexl.com/temp/TownCentric.gcc. These links will be e-mailed to you.

3. If you have already got the latest download of the data (gcd) file, you do not have to download this file again.
4. If you have already installed a prior version of LocateXL, please go to Add and **Remove Programs** in your Control Panel, and remove LocateXL.
5. Then run **LocateXL.exe**, following the prompts.
6. When successfully installed, open Excel 2007 or 2010 and go the the **LocateXL ribbon**.
7. Open **Help** and then **About** by clicking on the button and then click on **Update License**.
8. Click Load license from file and choose the **LocateXLLicense.lic** (or other named license file for LocateXL that you received from PrimeThought - it will have the extension .lic) to bring in the key of the license. Then when you click OK, your license will be valid and you will be able to use LocateXL.
9. To test that LocateXL is working, go to the **LocateXL ribbon** and under **Geocode Data**, choose open and then choose the gcd (geocode data file) that you have been provided with. If this data loads, you will see this information in the ribbon under the information section, then you know that LocateXL has been successfully installed.

These are the steps to using the quick geocoder:

1. Install SpatialXL.
2. Install LocateXL.
3. Load the geocode data file (.gcd)
4. Open the quick geocoder as a window or task pane.
5. If you would like to view the results on a map, read below.

Every field in the quick geocoder serves as a filter for other fields.

It works best if you type in a particular road name or a town etc.

When you then choose other fields, the choices of the other fields will be limited to the correct values for those areas.

Then click Locate and then if you want to see the location, locate on map.

You can also click Locate and then click Crossing to see if there are any crossings that you can choose from with that street.

Quick geocoder

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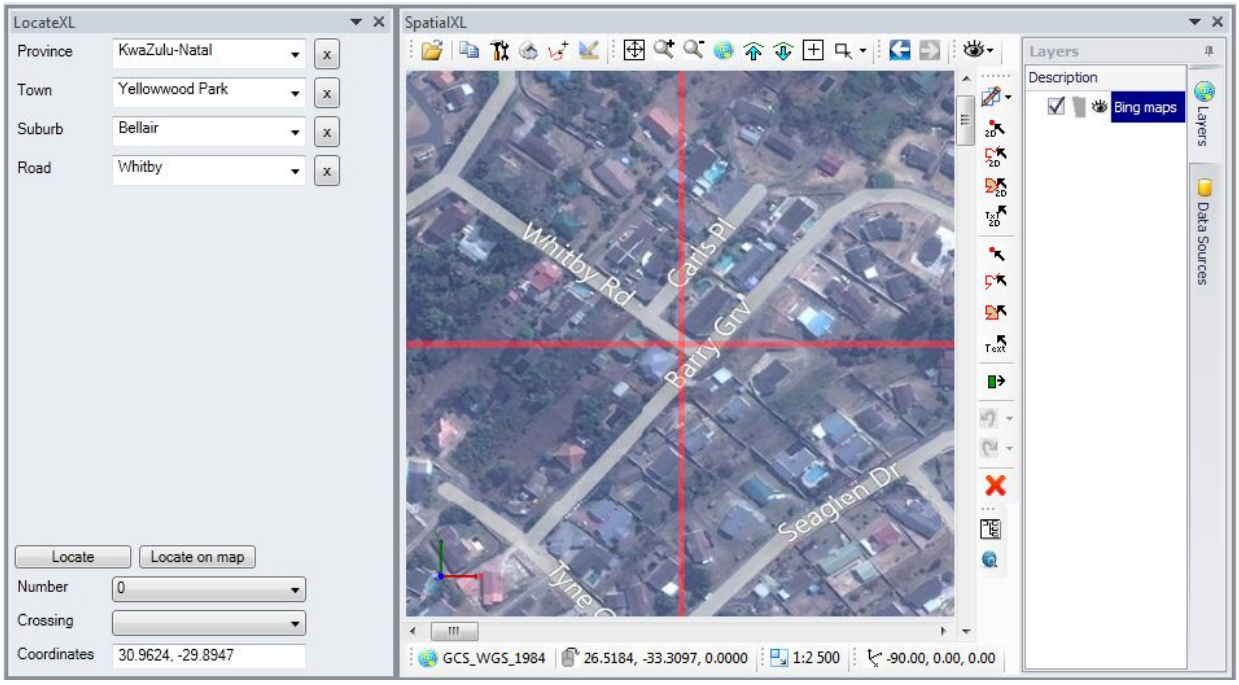
To use the Locate on Map, you should first follow the steps to turn on SpatialXL spatial pane, Set scene projection, Load background map, turn on crosshair and then you can locate on map. You can zoom in and out in the map by putting your cursor in the middle of the cross hair, clicking once (to bring the focus on the map) and then mouse wheeling back and forth.

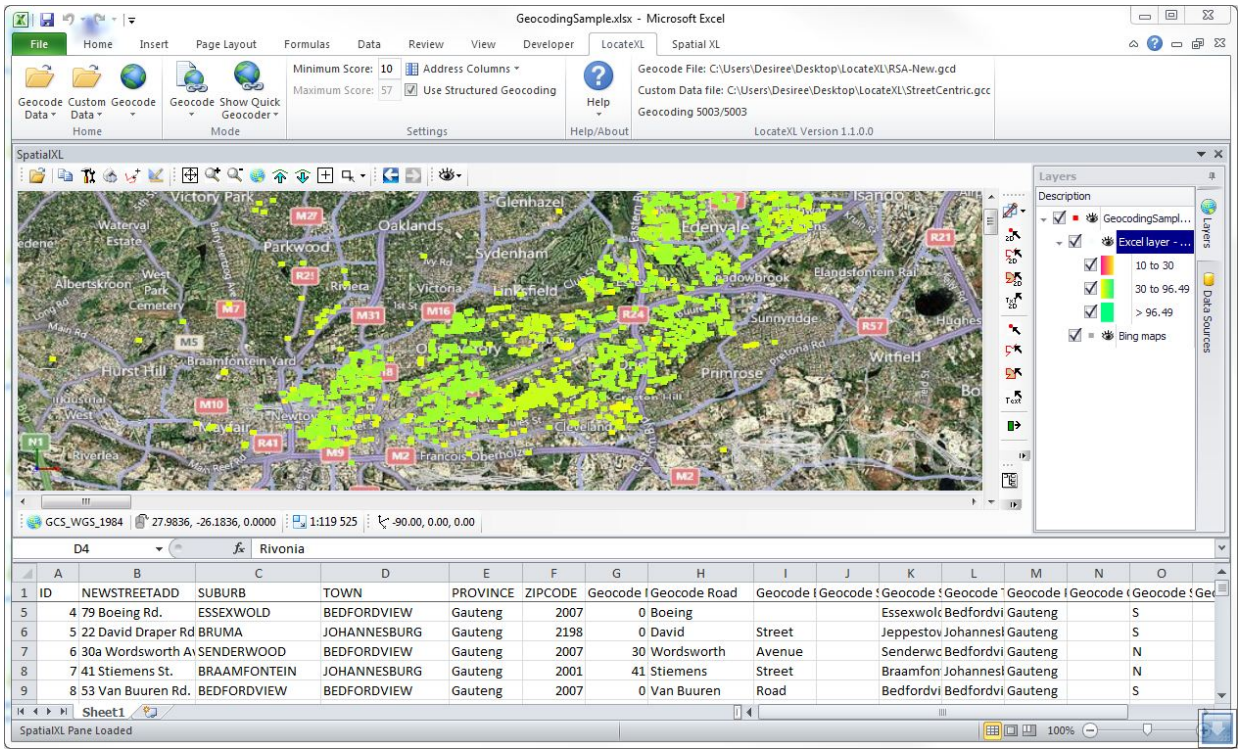


The steps to use the Batch Geocoder is the following:

1. Install SpatialXL.
2. Install LocateXL.
3. Load the geocode data file (.gcd)
4. Load a geocode custom file if you have any (.gcc)
5. Open your spreadsheet with the address data that you would like to geocode.
6. Choose whether you are going to do a structured or unstructured geocode.
7. Choose the address columns.
6. Make sure your settings are correct for the particular address set that you are using.
7. Choose your rows and Locate Selected or Locate All.
8. Analyse your results.
9. Tweak your settings and re-run if necessary.
10. Handle individual results where necessary.
    - 9.1 Handle by looking at Detailed Location Information.
    - 9.2 Handle by checking Quick Geocoder.
    - 9.3 You can also check out specific records by zooming to them on the map.
    - 9.3 Handle by applying changes and running selected rows again with different settings or changed data.
11. Place data on map.

To do this you need to follow the steps to turn on SpatialXL spatial pane, Set scene projection, Load background map, turn on crosshair and then you can right click on the spreadsheet and from the SpatialXL Context Menu choose Add Layer. You can zoom in and out in the map by putting your cursor in the middle of the cross hair, clicking once (to bring the focus on the map) and then mouse wheeling back and forth. You can also right click on the new layer in SpatialXL and Zoom fit to that layer and so on. Full functionality is in SpatialXL Help.

12. Do thematics or other actions to mapped data. How to do this is described in SpatialXL Help.



When having completed geocoding in a spreadsheet, LocateXL creates columns for the geocoded number of the street, the geocoded road, the geocoded suburb, town, province as well as the geocoded status which tells you whether it geocoded to the street number, the road name, the suburb, the postal code and so forth and the score as well as the confidence level of the result.

This is what every column represents:

The geocode number: example 93 - This is the street number result. If there is no street number, the geocode number will be 0.

The geocode road: example Barkly - This is the geocoded roade result. If LocateXL cannot find the road, but geocodes to suburb or town level, it will return the first road it found for that town in the data.

The geocode extension: example Road. - This is usually road, lane, street etc. This can be blank if the extension in the base data was left blank.

The geocode suffix: example West - for instance Kei Road West. The West would be the Suffix.

The geocode crossing: example Main - if the data geocoded to a crossing, the second street's name would be in here and the geocode status would be S for Street.

The geocode suburb: example Galeshwe

The geocode town or city: example Kimberley

The geocode province: example North Cape.

The geocode status: We use codes the following codes for showing the status of the geocoded record.

N means it geocoded to the exact street with the street number.
S means it geocoded to street level
0 means it geocoded to suburb level
1 means it geocoded to the city or town level.
I means it geocoded to a point of interest's location.
P means it geocoded to postal code.
F means the geocode failed.

Geocode score: For a more complete description of geocode score, please look at the Parameters section:

Example 29 is the score of the geocode. This is calculated out of the total possible score as discussed previously.

Geocode confidence:
Then we give a percentage confidence which is the score out of the total possible score, expressed as a percentage, so in this case 82.85 percent.
This way, you can look at lower scoring records, and see if the settings or the records can be refined to score higher confidence levels.

and of course most importantly, you will get the **X coordinate** and the **Y coordinate** of the geocoded data, so that you may place these on a map.

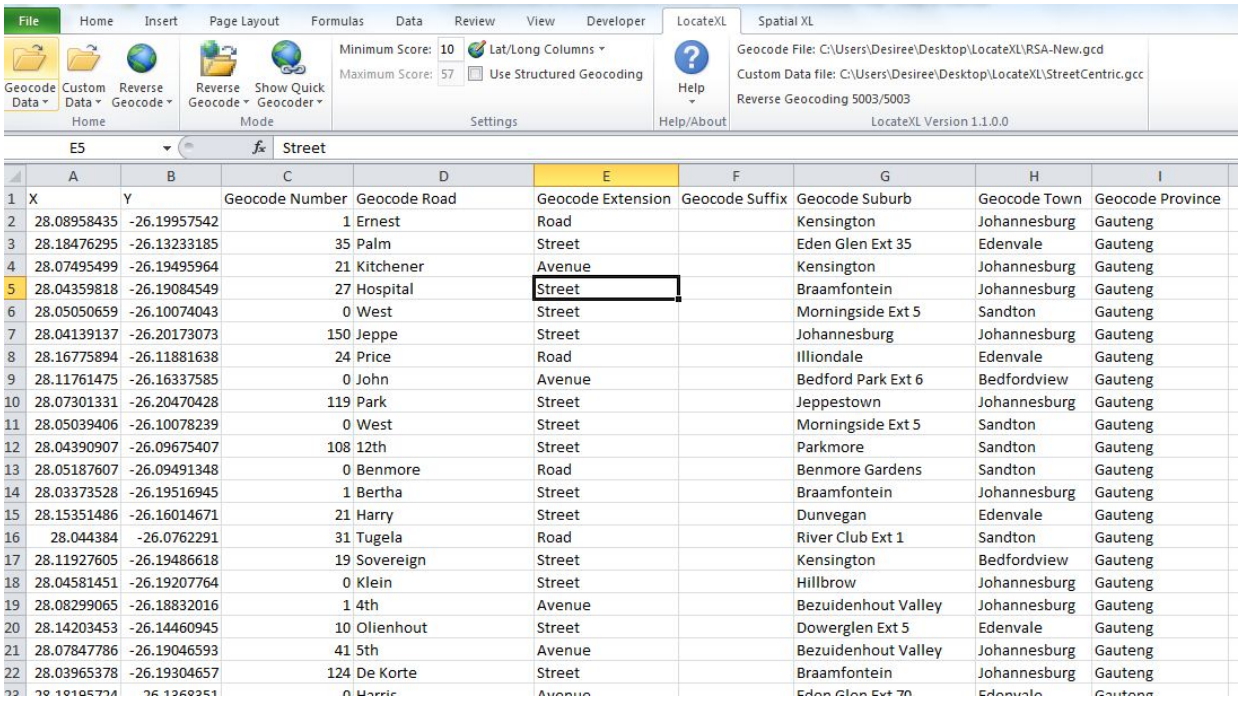
Reverse geocoding is to get address data for X and Y locations.

1. Install SpatialXL.
2. Install LocateXL.
3. Load the geocode data file (.gcd)
4. Load a geocode custom file if you have any (.gcc)
5. Open your spreadsheet with the X and Y coordinates that you would like to reverse geocode.
6. Choose the lat/long columns.
7. Choose your rows and Locate Selected or Locate All.
8. Place data on map.
9. Place data on map.

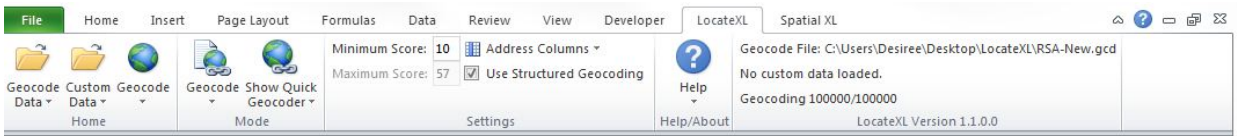
To do this you need to follow the steps to turn on SpatialXL spatial pane, Set scene projection, Load background map, turn on crosshair and then you can right click on the spreadsheet and from the SpatialXL Context Menu choose Add Layer. You can zoom in and out in the map by putting your cursor in the middle of the cross hair, clicking once (to bring the focus on the map) and then mouse wheeling back and forth. You can also right click on the new layer in SpatialXL and Zoom fit to that layer and so on. Full functionality is in SpatialXL Help.

10. Do thematics or other actions to mapped data. How to do this is described in SpatialXL Help.

Reverse geocoder 8

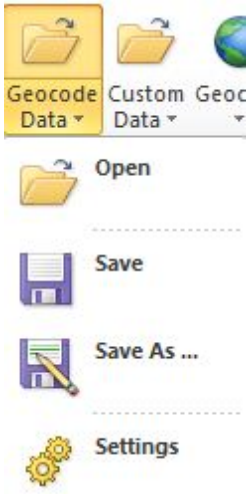


	A	B	C	D	E	F	G	H	I
1	X	Y	Geocode Number	Geocode Road	Geocode Extension	Geocode Suffix	Geocode Suburb	Geocode Town	Geocode Province
2	28.08958435	-26.19957542	1	Ernest	Road		Kensington	Johannesburg	Gauteng
3	28.18476295	-26.13233185	35	Palm	Street		Eden Glen Ext 35	Edenvale	Gauteng
4	28.07495499	-26.19495964	21	Kitchener	Avenue		Kensington	Johannesburg	Gauteng
5	28.04359818	-26.19084549	27	Hospital	Street		Braamfontein	Johannesburg	Gauteng
6	28.05050659	-26.10074043	0	West	Street		Morningside Ext 5	Sandton	Gauteng
7	28.04139137	-26.20173073	150	Jeppe	Street		Johannesburg	Johannesburg	Gauteng
8	28.16775894	-26.11881638	24	Price	Road		Illiondale	Edenvale	Gauteng
9	28.11761475	-26.16337585	0	John	Avenue		Bedford Park Ext 6	Bedfordview	Gauteng
10	28.07301331	-26.20470428	119	Park	Street		Jeppestown	Johannesburg	Gauteng
11	28.05039406	-26.10078239	0	West	Street		Morningside Ext 5	Sandton	Gauteng
12	28.04390907	-26.09675407	108	12th	Street		Parkmore	Sandton	Gauteng
13	28.05187607	-26.09491348	0	Benmore	Road		Benmore Gardens	Sandton	Gauteng
14	28.03373528	-26.19516945	1	Bertha	Street		Braamfontein	Johannesburg	Gauteng
15	28.15351486	-26.16014671	21	Harry	Street		Dunvegan	Edenvale	Gauteng
16	28.044384	-26.0762291	31	Tugela	Road		River Club Ext 1	Sandton	Gauteng
17	28.11927605	-26.19486618	19	Sovereign	Street		Kensington	Bedfordview	Gauteng
18	28.04581451	-26.19207764	0	Klein	Street		Hillbrow	Johannesburg	Gauteng
19	28.08299065	-26.18832016	1	4th	Avenue		Bezuidenhout Valley	Johannesburg	Gauteng
20	28.14203453	-26.14460945	10	Olienhout	Street		Dowerglen Ext 5	Edenvale	Gauteng
21	28.07847786	-26.19046593	41	5th	Avenue		Bezuidenhout Valley	Johannesburg	Gauteng
22	28.03965378	-26.19304657	124	De Korte	Street		Braamfontein	Johannesburg	Gauteng



Click on a button to find out more about each section.

Geocode Data



Click on a button to find out more about it.

This is where you work with the GCD file (Your Geocode Data file) and where you set up settings to do the geocoding with.

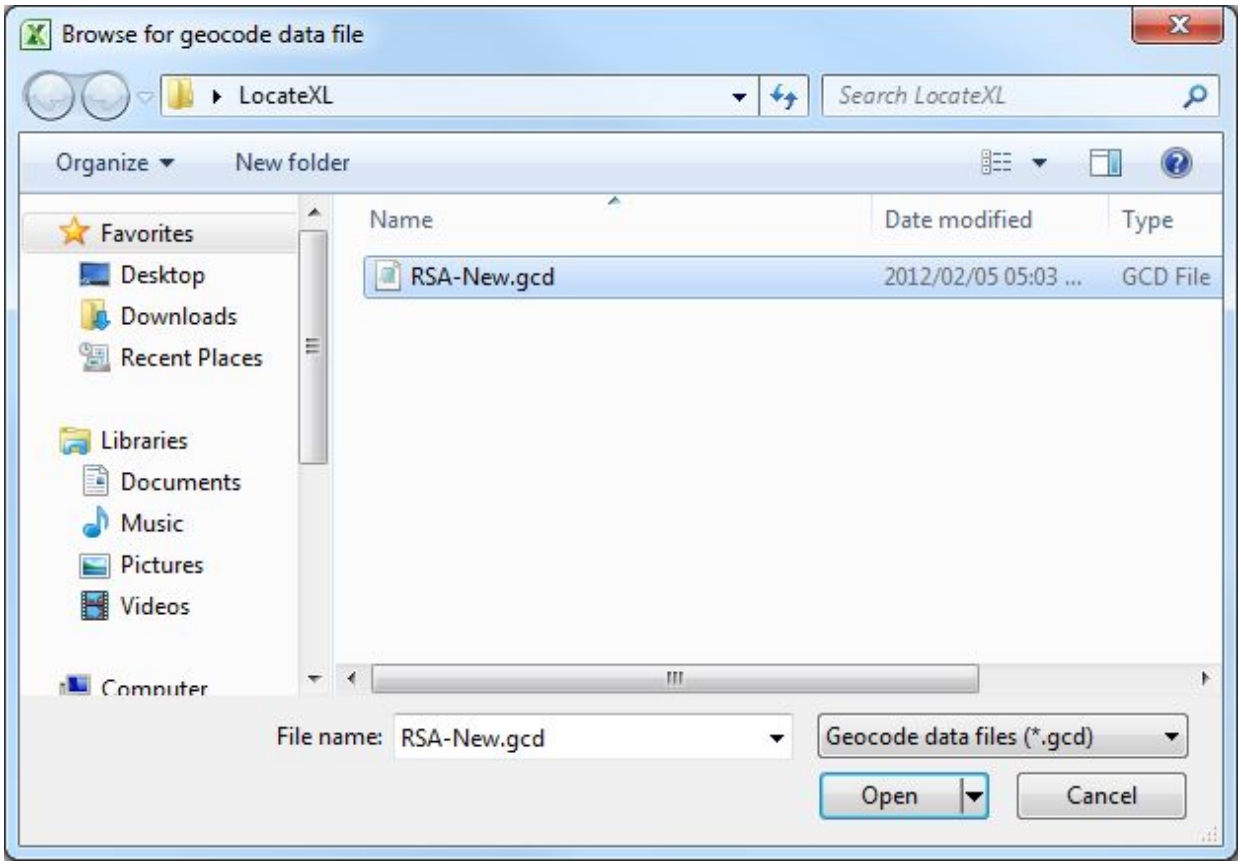
The Settings is related to the Bulk Geocode and getting detailed information on particular geocoded

records.

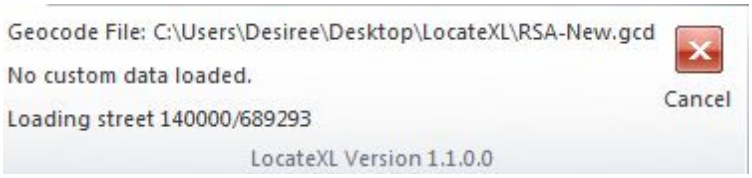
Open

This is what you do before you start doing any geocoding.

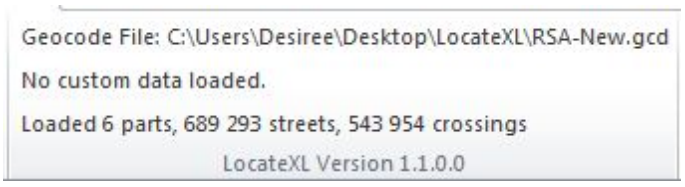
When you click on open you must go to the most recent gcd file that you have and open that.



Once this starts loading, you will see in the information section of the Ribbon that the loading is happening.

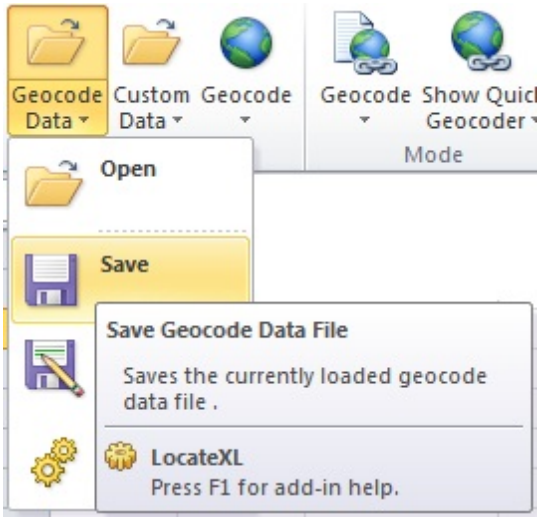


When it is completed, it will look like this:


Geocode File: C:\Users\Desiree\Desktop\LocateXL\RSA-New.gcd
No custom data loaded.
Loaded 6 parts, 689 293 streets, 543 954 crossings
LocateXL Version 1.1.0.0

Now you are ready to geocode.

Save



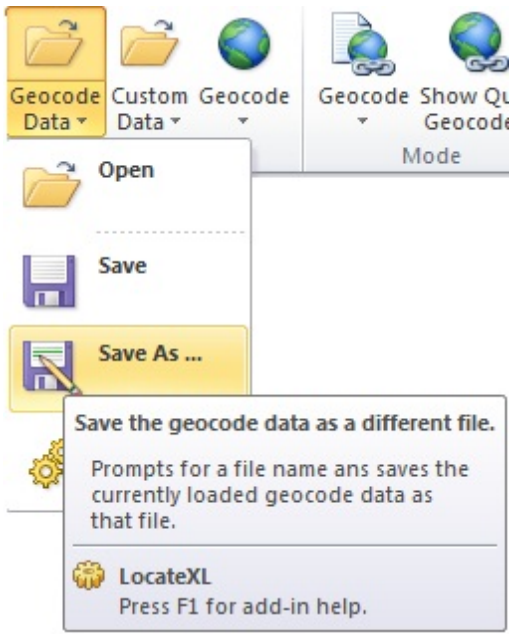
You can save your own GCD file if you have made changes to the setting of the file.

The only problem that you might experience, is when we build a new GCD file at PrimeThought due to map updates, you will lose all these changes as the new GCD file will overwrite the old file.

It is better to save Custom Data. Then you will never lose your changes.

This option is for clients who only work with their own data set or maintain their own data set.

Save As



You can save your own GCD file as another file if you have made changes to the setting of the file.

The only problem that you might experience, is when we build a new GCD file at PrimeThought due to map updates, you will lose all these changes as the new GCD file is not able to be merged with an old GCD file.

It is better to save Custom Data. Then you will never lose your changes.

This option is for clients who only work with their own data set or maintain their own data set.

Settings

The geocode data settings sets up scoring weights, soundex weights, points of interest weights and aliases for road names and other...

All of the settings you can tweak for the best result geocoding are in these tabs.

Click on one of the tabs to find out more about the settings contained therein.

Address Parts

How to set up the settings for geocoding in the Address Parts:

Weight: This is the weight that the match or non match counts in the total geocode score. For instance in the above example, I have decided that the weight for a road is 10 points. Should a road match exactly letter for letter the name of the road in the geocode data file, you will get the full 10 points for the road record. If the road is slightly misspelt, the Soundex might still match.

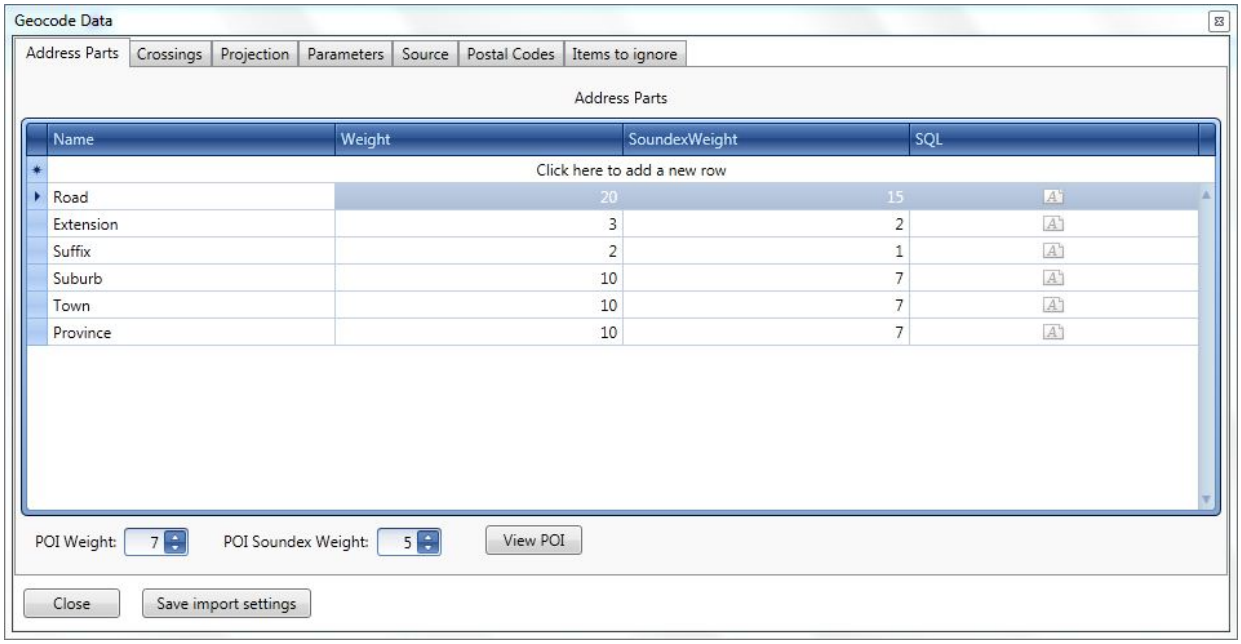
You use weight for also changing a set to be more suburb or town centric or more road centric. Some rural areas might have terribly bad names for the roads, in that case your suburb or town weights need to be much higher than roads! Remember also to bring down the Soundex scores appropriately.

Soundex Weight: The Soundex is an index for sounds like type of names. If you have slightly misspelt a name, you can still match it in certain circumstances to the original name, depending on how bad the spelling mistake is.

For instance in the following example, I have Cros Street and Cross Street in Port Elizabeth. They both geocode to Cross Street, but the one is a Soundex match at 5 points lower than the other:

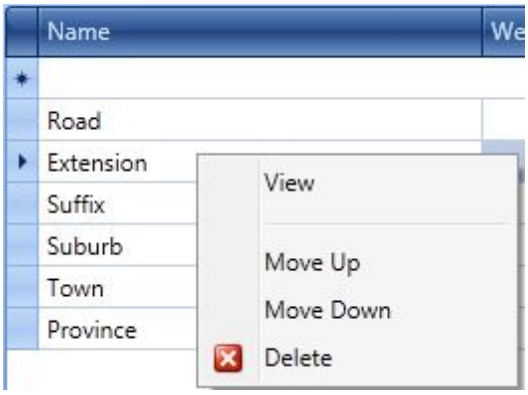
Key	ADDR_LINE1	SUBURB	TOWN	PROV	Gec	Geocod	Geocod	Geocode Suburt	Geocode Town	Geocode Provin	X	Y	Geo	Geo	Geocode Confide
1	Cros Street	PORT ELIZABETH	PORT ELIZABETH	Eastern Cape	0	Cross	Street	Port Elizabeth	Port Elizabeth	Eastern Cape	25.61328	-33.958	S	48	84.21
2	Cross Street	PORT ELIZABETH	PORT ELIZABETH	Eastern Cape	0	Cross	Street	Port Elizabeth	Port Elizabeth	Eastern Cape	25.61328	-33.958	S	53	92.98

SQL: These items can be extracted from a database, where available, so there is provision here to put in the SQL to do that. Our current geocoding is based on shape file loading so this feature is not used currently, except for clients who have and maintain there own geocoding databases.

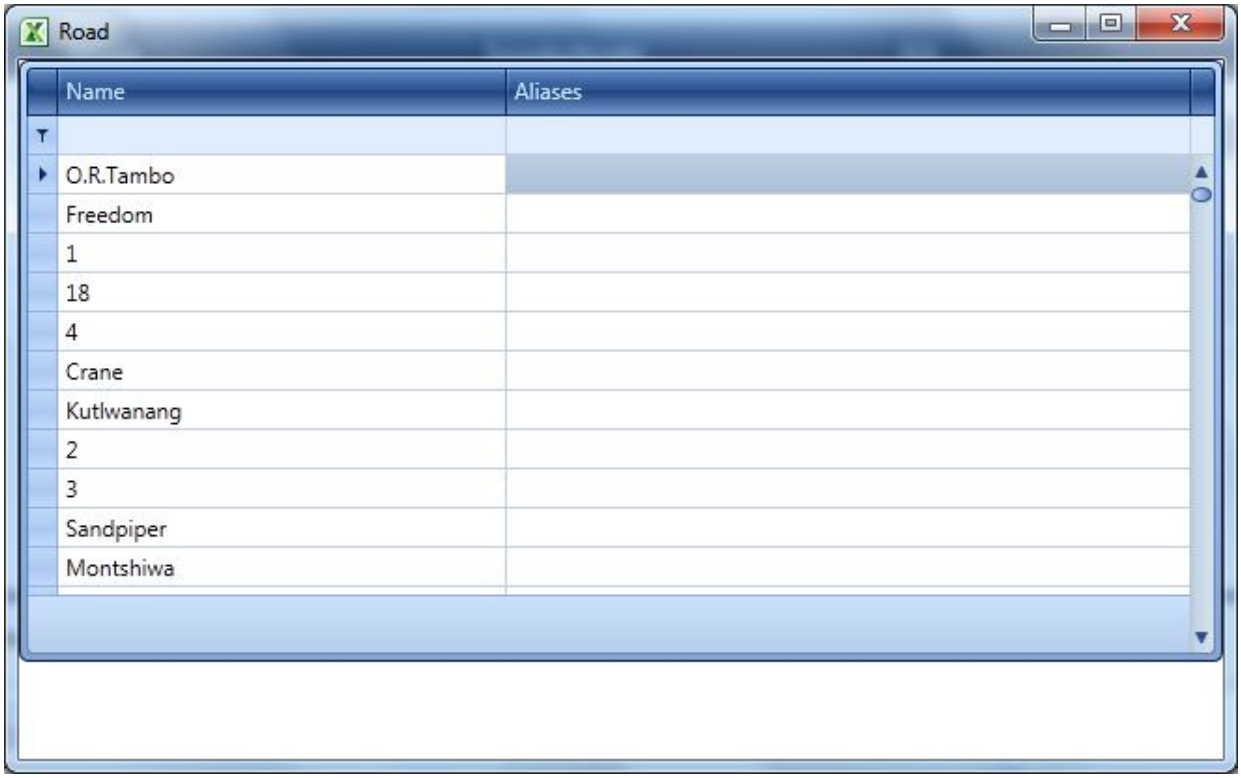


Road

If you right click on Road in the Settings > Address Parts dialog and click on View:

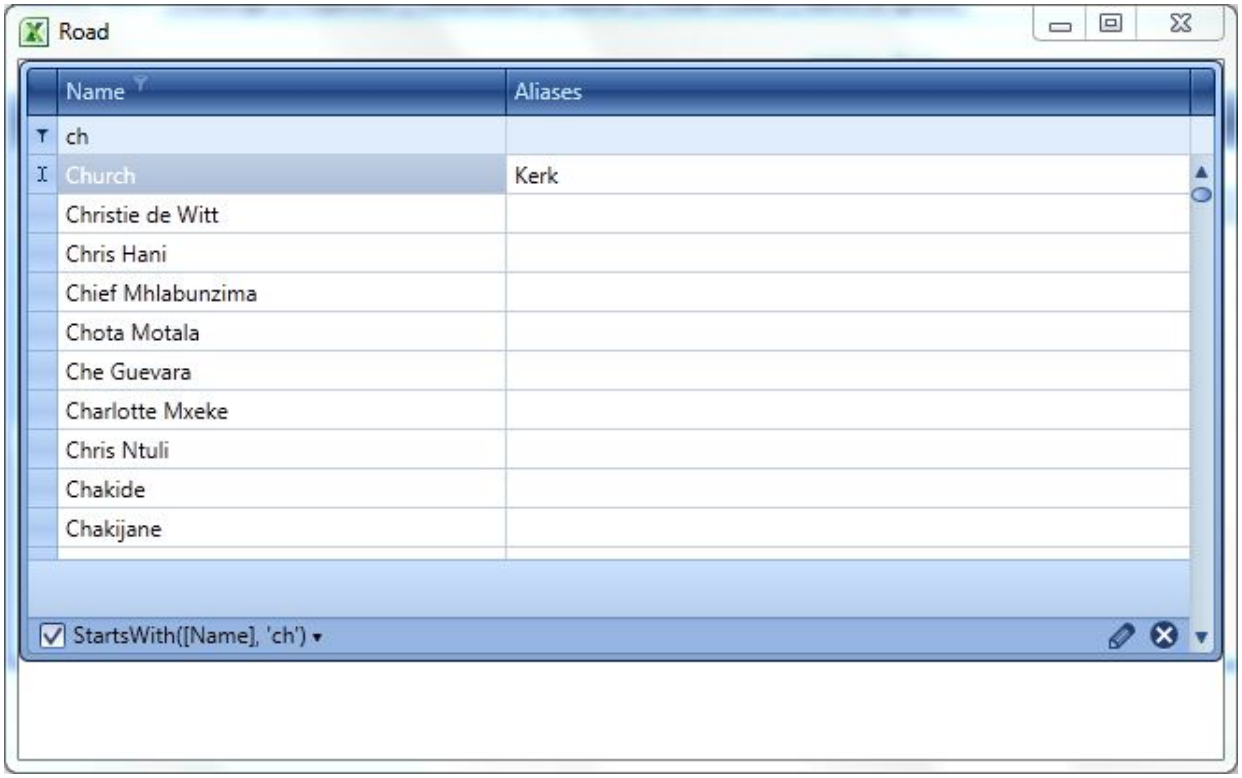


A dialog come up where you can see the names of all of the roads in the data set. You can also search for a particular road name to see if it exists.



You can also enter aliases for particular roads, for instance Church = Kerk (alias) so that the road name Kerk will also geocode to Church.

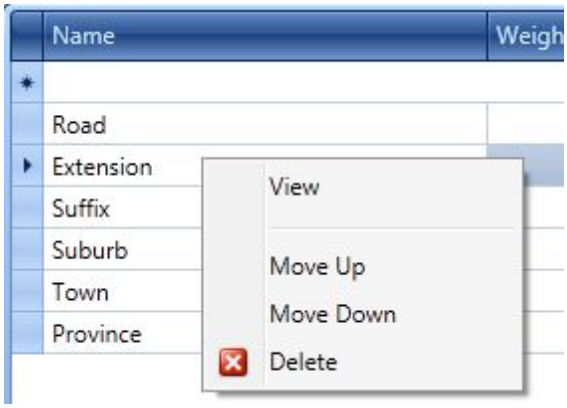
Remember to save the settings when you are done and to save the data as a custom data file, otherwise the settings will be lost next time you load the map data.



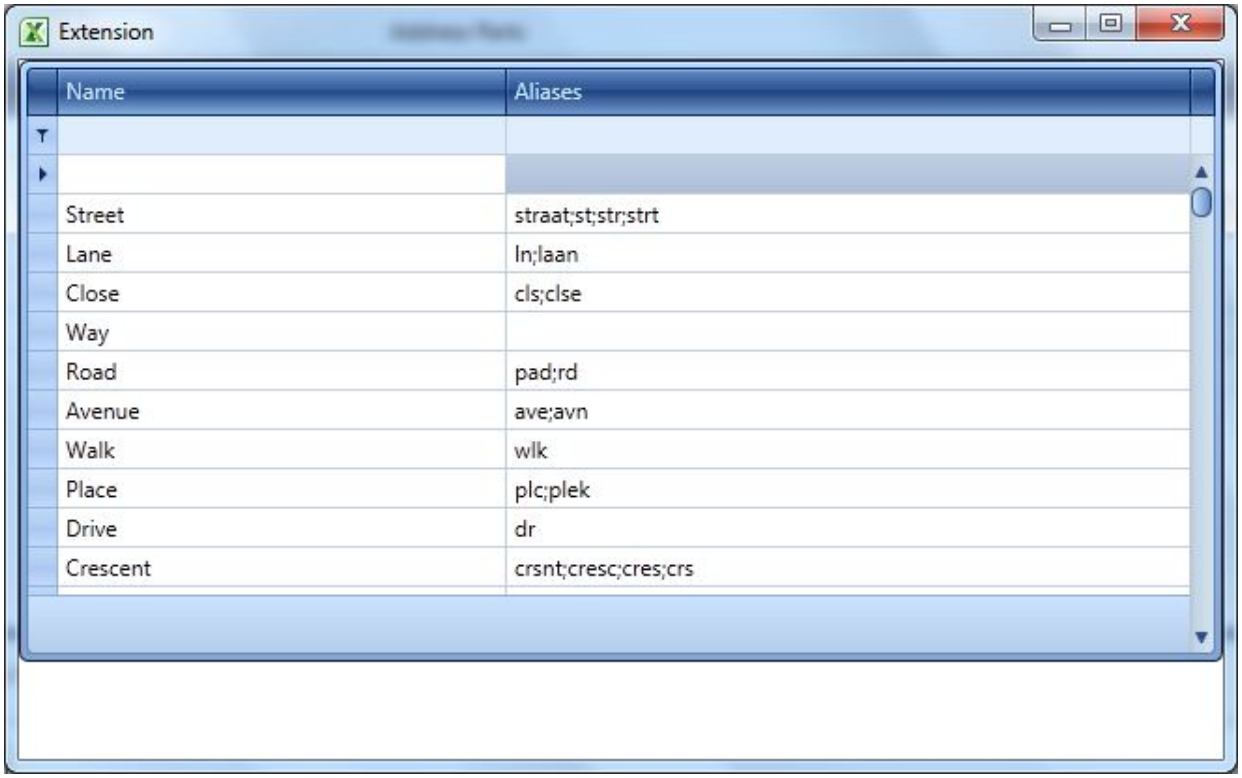
Extension

An extension is for example Road, Lane, Close, Avenue and so forth.

If you right click on Extension in the Settings > Address Parts dialog and click on View:



A dialog come up where you can see the names of all of the extensions in the data set. You can also search for a particular extension to see if it exists.

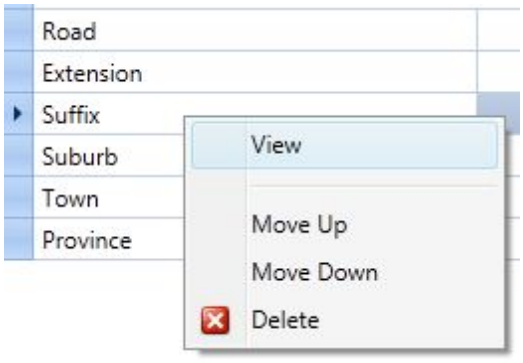


You can also add your own aliases for example for Street so that the words st, str, and so forth will also geocode correctly to Street.

Suffix

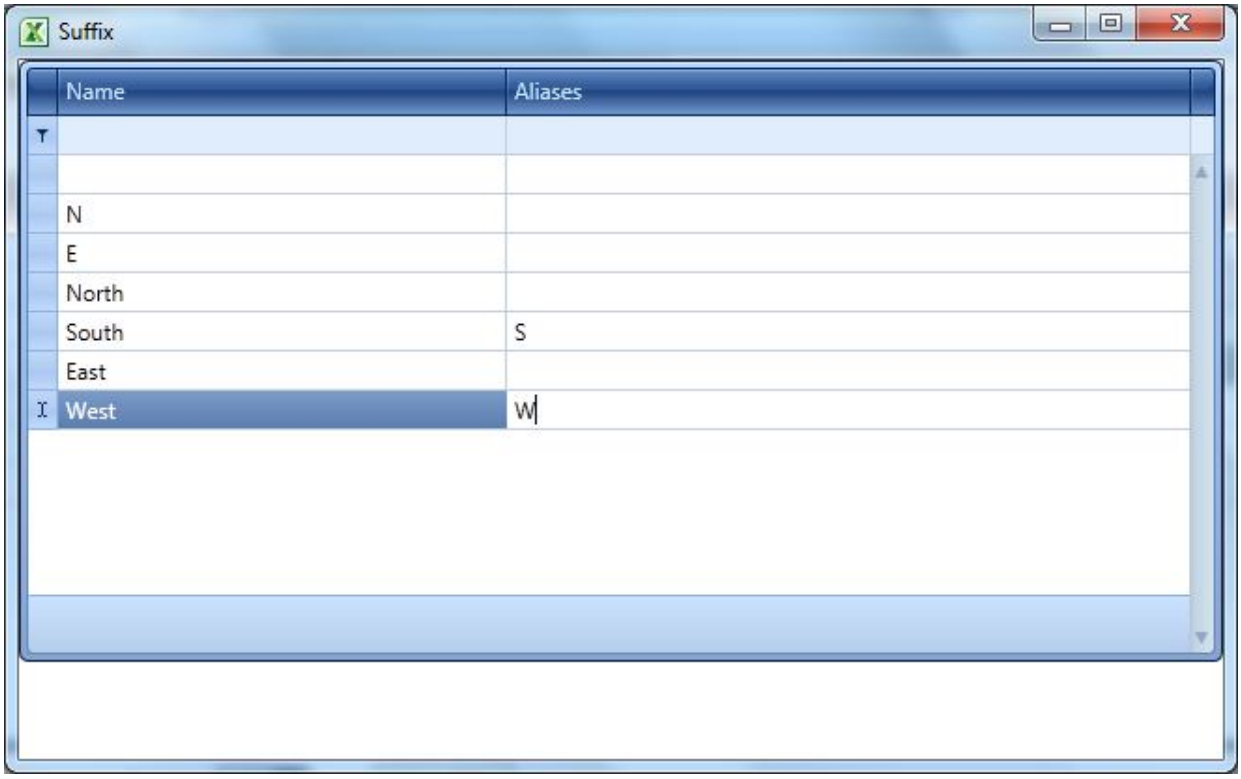
A Suffix is North, East, South or West, for instance Langebaan Road West. The West would be the suffix.

If you right click on Suffix in the Settings > Address Parts dialog and click on View:



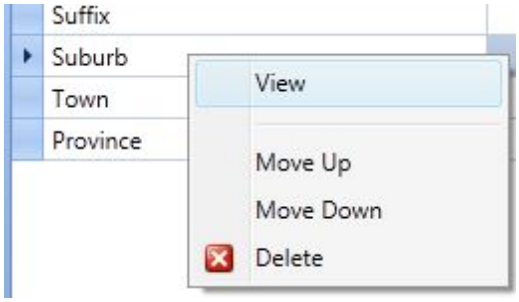
A dialog come up where you can see the names of all of the suffixes in the data set. You can also search for a particular suffix to see if it exists.

You can also add your own aliases so that the words S, N and so on would geocode to South and North.



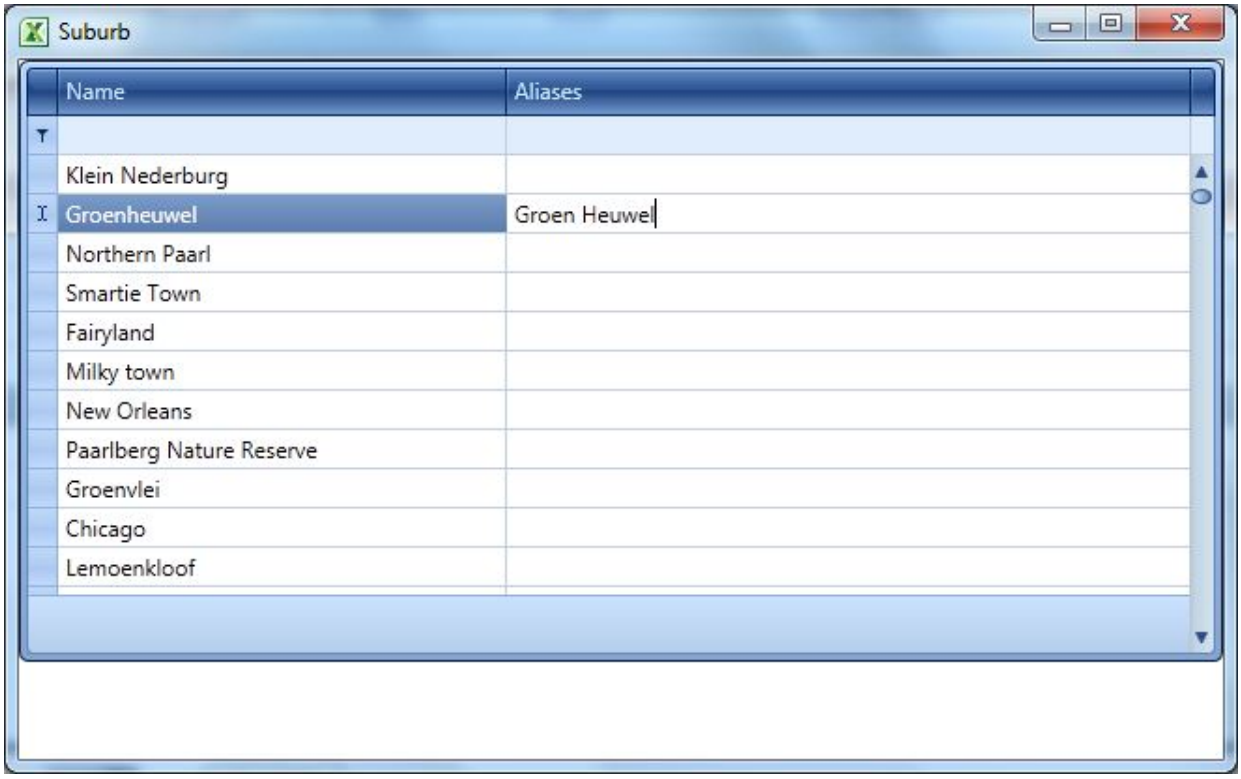
Suburb

If you right click on Suburb in the Settings > Address Parts dialog and click on View:



A dialog come up where you can see the names of all of the suburbs in the data set. You can also search for a particular suburb to see if it exists.

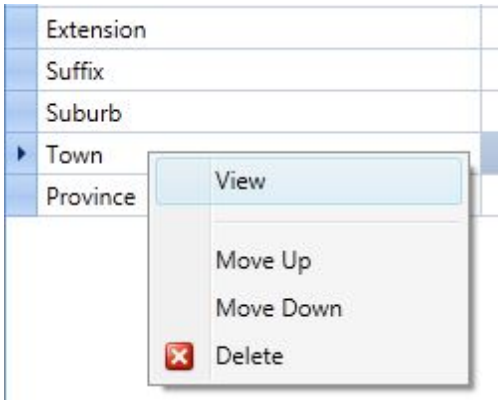
You can also add your own aliases so that other known names of particular suburbs also geocode.



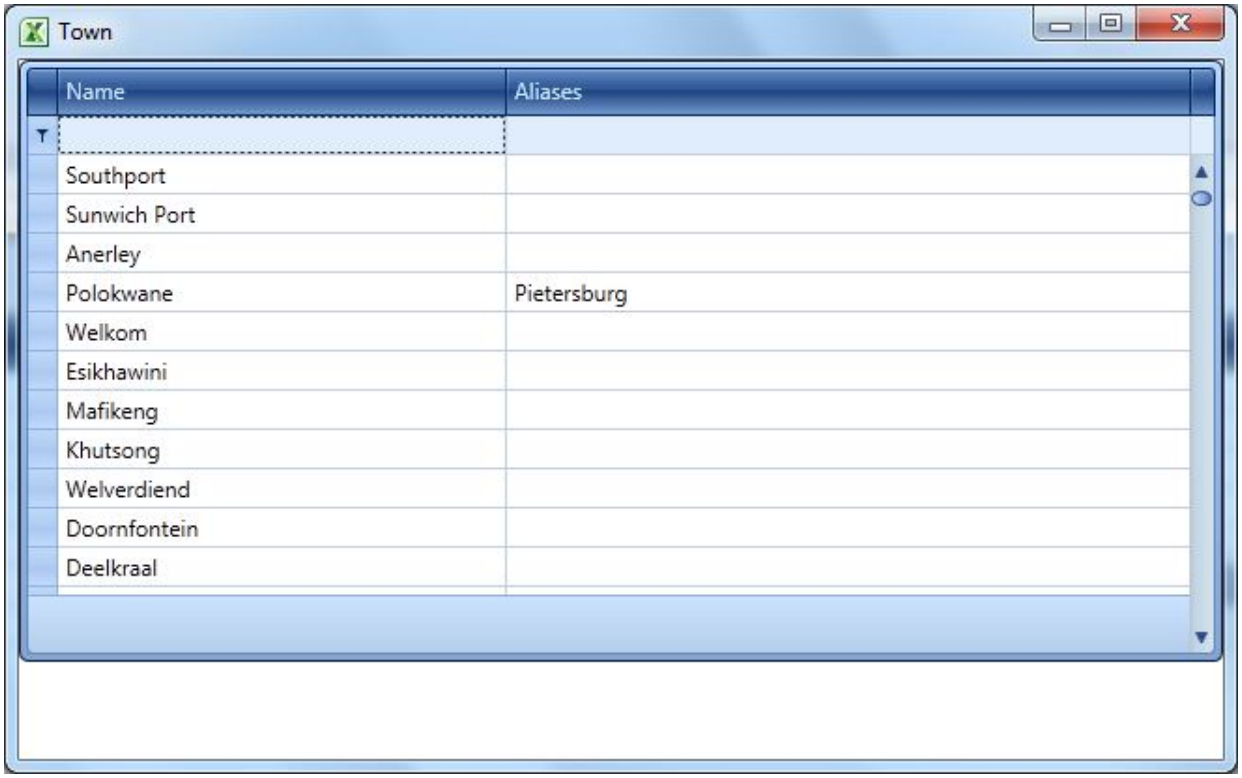
Tow n

Towns and Cities.

If you right click on Town in the Settings > Address Parts dialog and click on View:

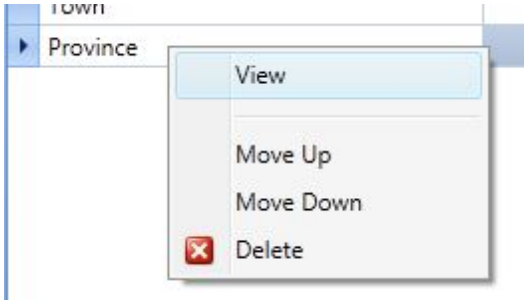


A dialog come up where you can see the names of all of the towns in the data set. You can also search for a particular town to see if it exists. You can also add your own aliases so that the new names of towns or the old names of towns and cities are taken into account when geocoding.

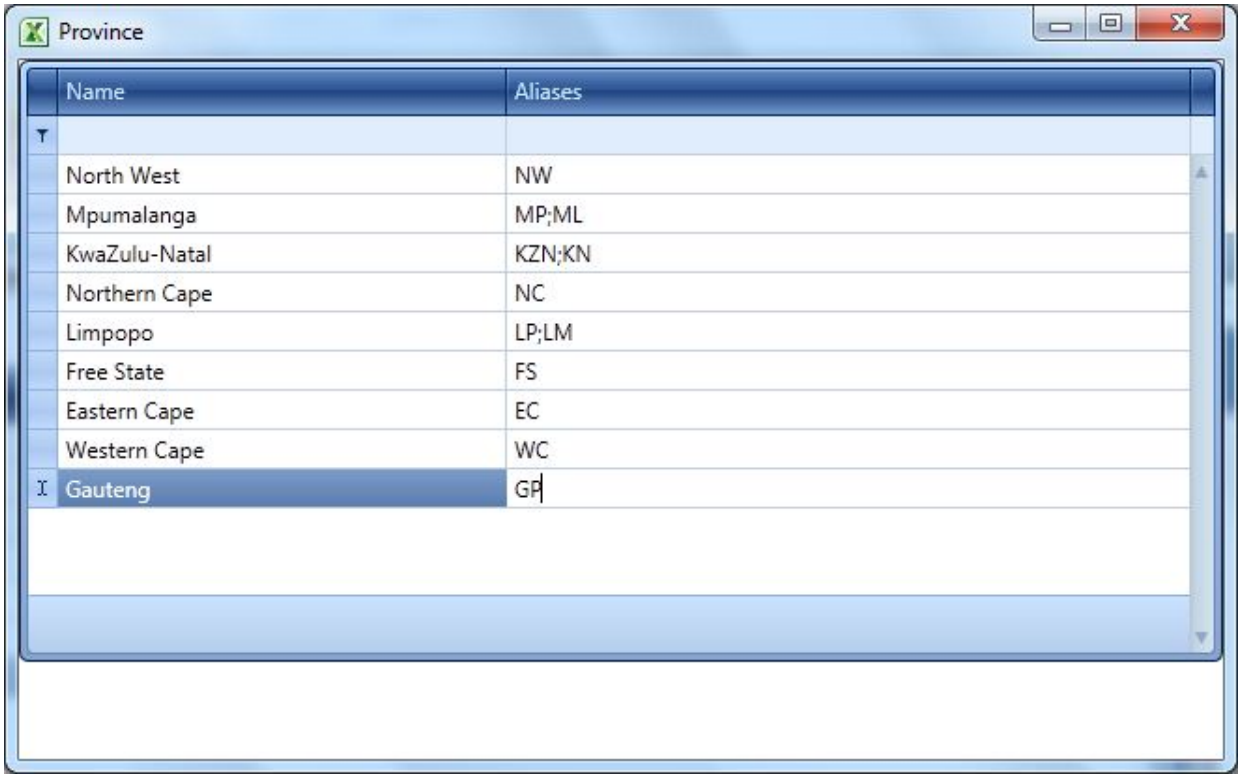


Province

If you right click on Province in the Settings > Address Parts dialog and click on View:



A dialog come up where you can see the names of all of the provinces in the data set and you can add aliases where needed.

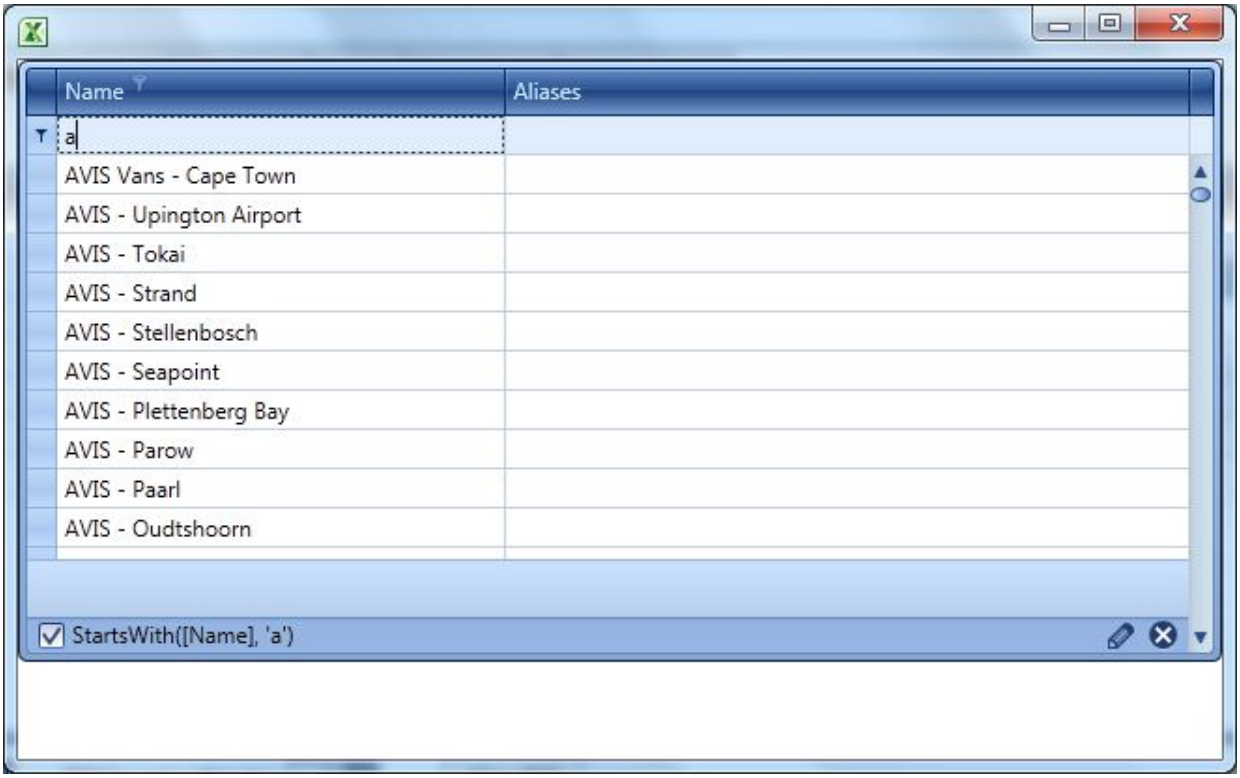


Points of interest

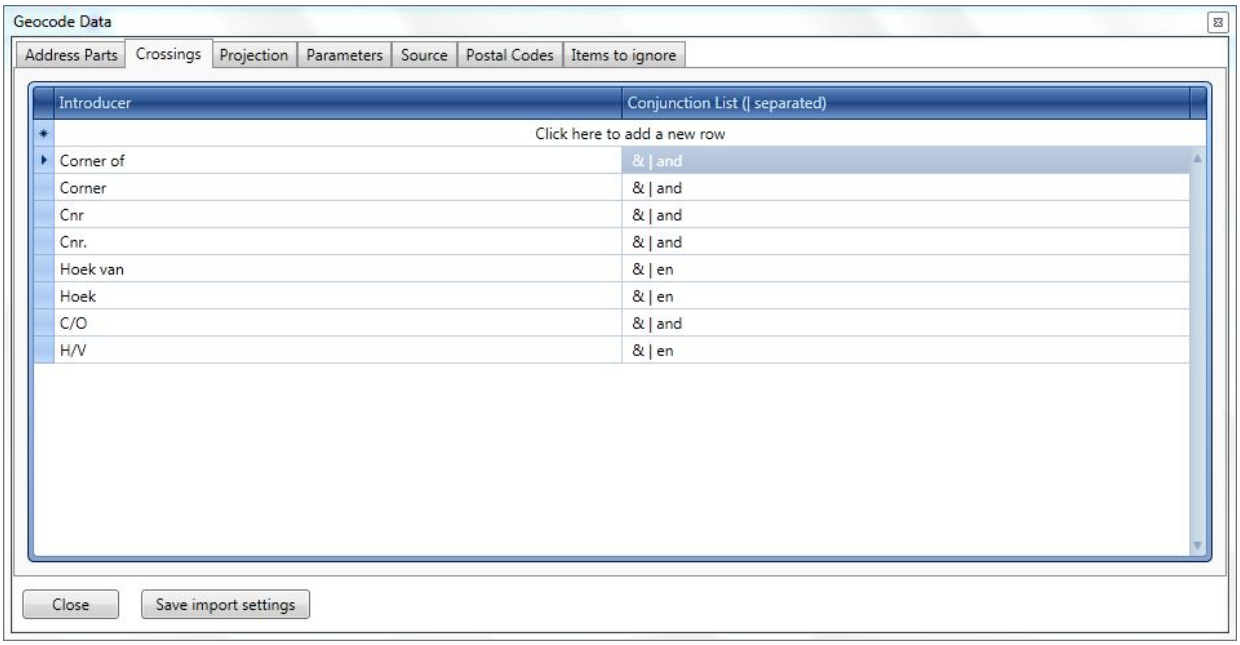
If you click on the View POI button, it will bring up a list of Points of Interest in the country.

Here you can search for POI's in the dataset and put in aliases as well.

LocateXL can geocode to POI if the POI does exist in the dataset.



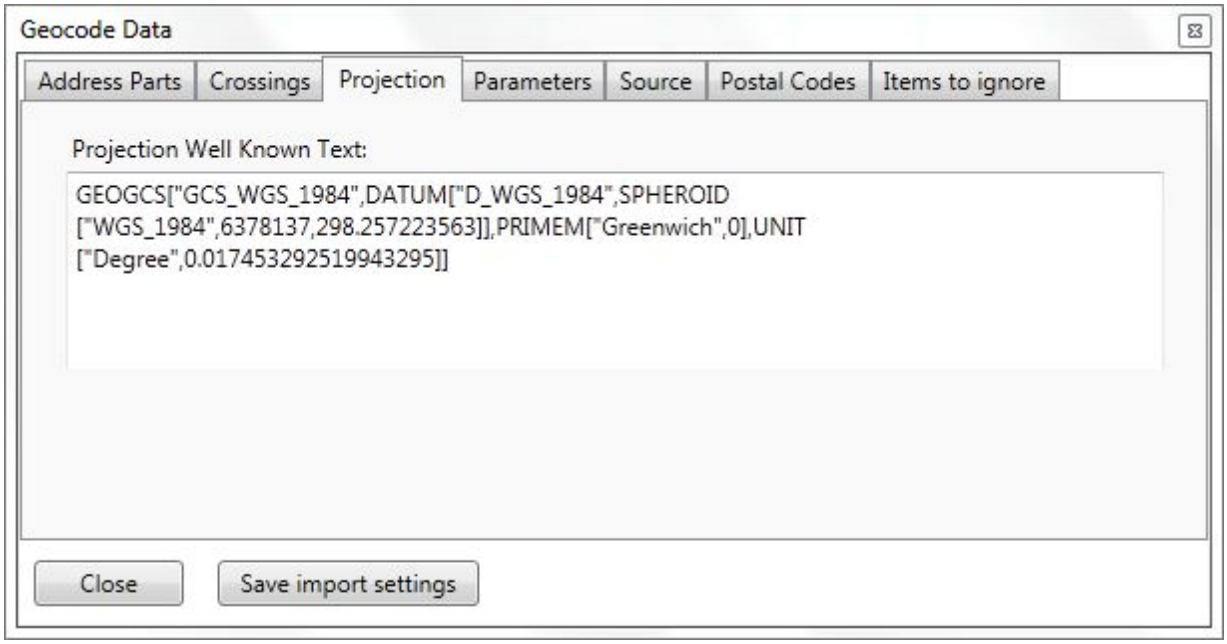
Crossings



LocateXL will geocode to crossings where they exist in the data set. You can set up the list of possible namings of the crossings in the Crossings tab of the settings.

Projection

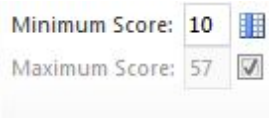
The Well Known Text projection of the data is set up in the Projection tab. In this instance we are using the WGS 84 projection.



Parameters

The geocoding parameters are set up in this tab. Please read this section together with the Analysis of Results section.

The minimum score out of the total possible score you can set up here, or you can set it up directly in the ribbon.



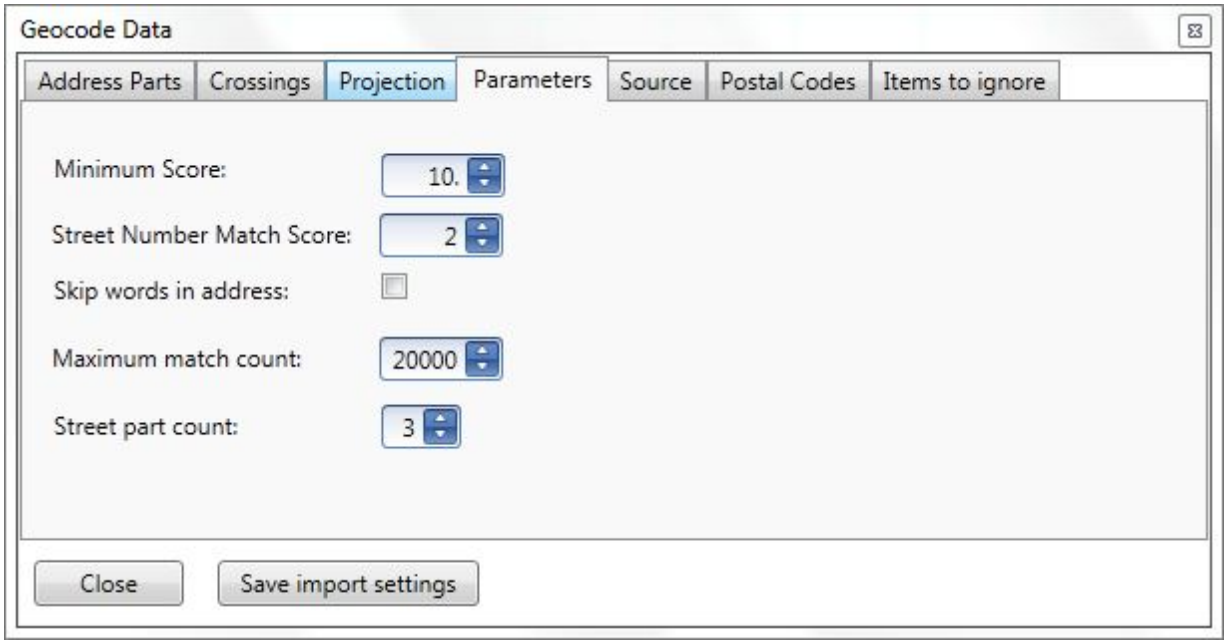
As you can see from this example, we require that at least 10 out of 57 scores to have a successful geocode result. The lower the score the more results will come through, but if the score is too low, lots of invalid results will be passed as successful.

If the score is too high, then a lot of geocoding might fail instead of being passed successfully, even though results might be quite accurate.

The geocode score is made up of the following items:

In Address Parts:
The road name score and soundex score (It will be out of the total of the Weight, if it is a Soundex match, the Soundex weight will count)
The extension score and soundex score
The suffix score and soundex score
The suburb score and soundex score
The town score and soundex score
The province score and soundex score
The point of interest score and soundex score (This will replace the road name, extension and suffix if it is a POI match)

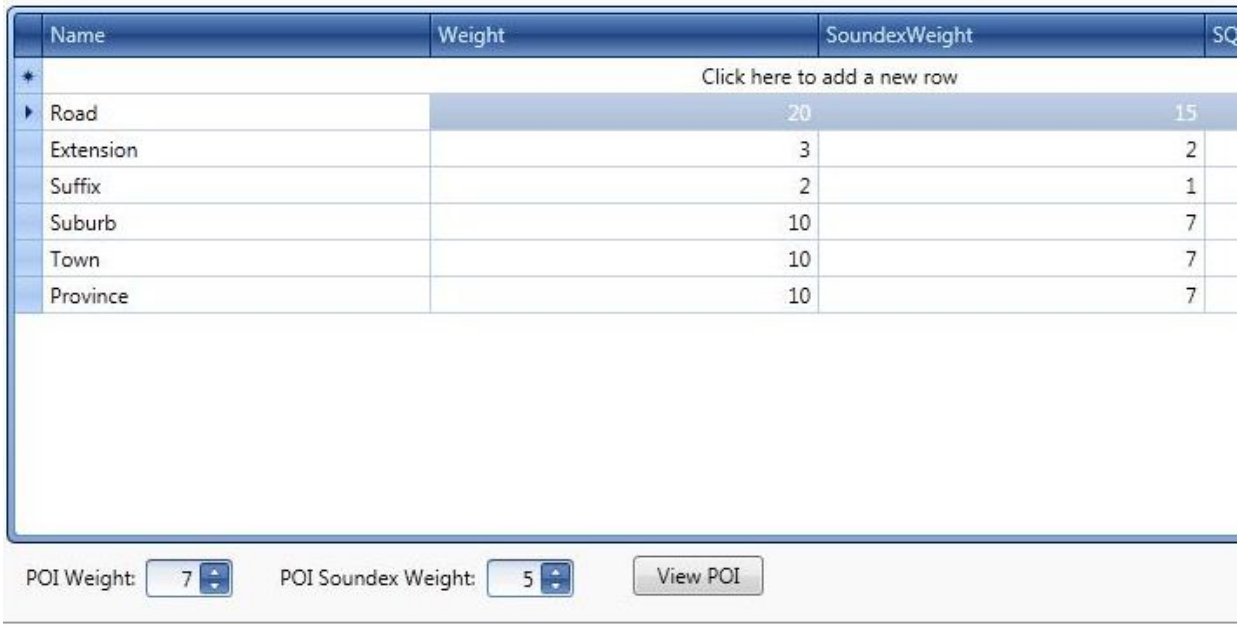
In the parameters:
The Street number match score



Skip words, maximum match count and street part count are advanced features. You can leave these as they are.

Example of scoring:

The total maximum score would be calculated like this:



Road: Total possible 20. If it is a soundex match, scores 15.
Extension: 3, Suffix, 2, Suburb, 10, Town 10, Province 10.
Street number match 2.

TOTAL POSSIBLE SCORE: 20+3+2+10+10+10+2=57

POI would replace the 20+3+2+2 with 7 total possible points and take into account the suburb, town and province scores as well.

Minimum score: 10 (So matches on suburbs and towns will also give a correct match.)

As an example the following address would score like this:

32 Denise Road, Buccleuch, Sandton, Gauteng

It geocodes to

32 Denise Road, Buccleuch, Klipfontein, Gauteng.

It matches on street number (2), Denise (20), Road (3), Buccleuch (10), Gauteng (10)

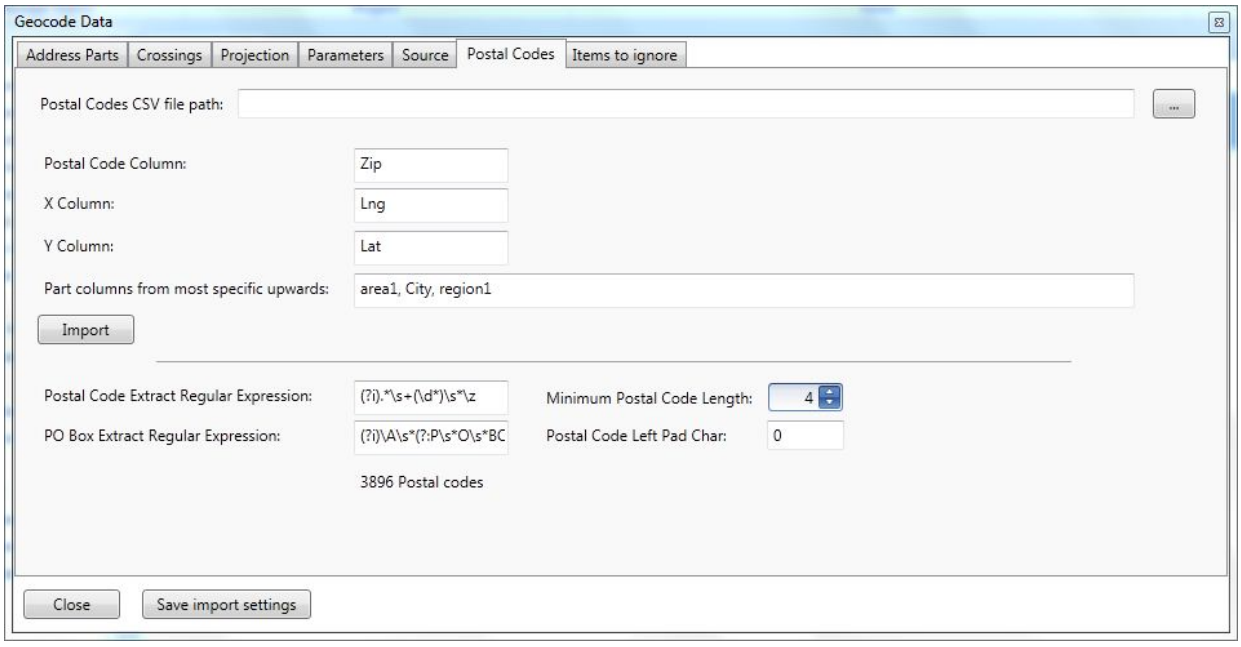
So the total score is 45 out of a possible of 57. And this is of course a very good score.

Source

These are advanced settings for clients that maintain their own geocode data sources.

Postal codes

Geocode results can be to postal codes as well. The only time that the data will geocode to a postal code is if there is some variant of "PO Box" in the street address field and a postal code in another column, marked as postal code. Then the address data will geocode to postal code and the status of that particular geocode will be "P". For more information on analysing the results, please look at the Analysis of Results section.

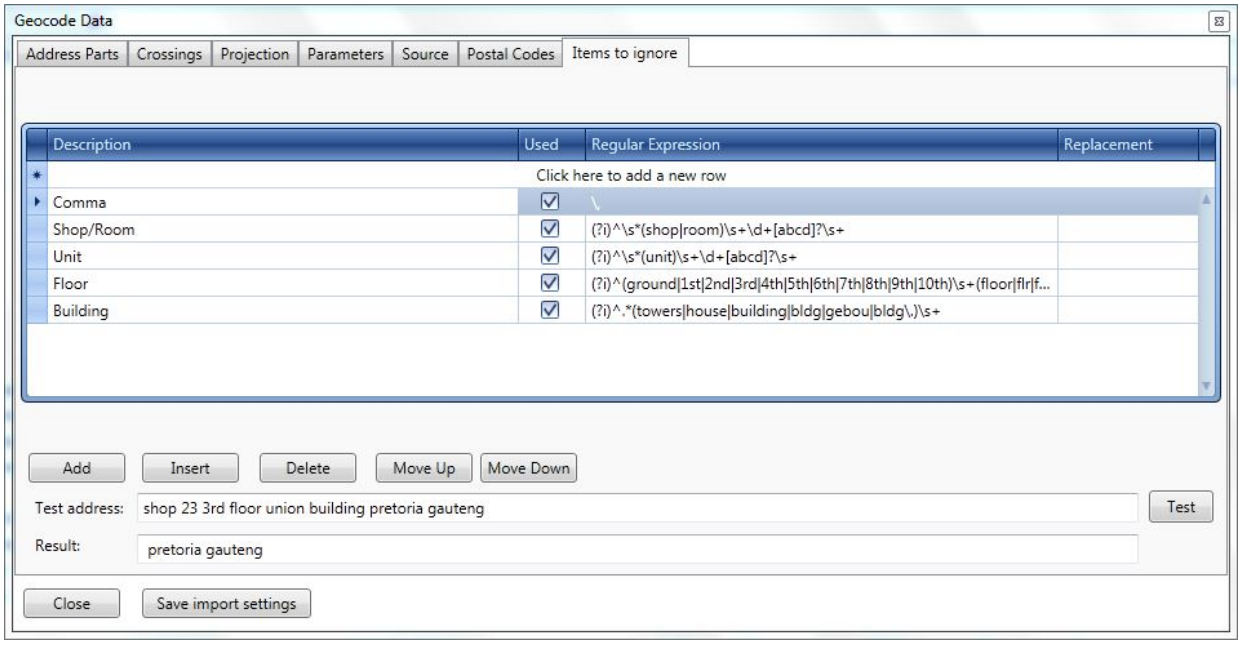


Postal codes are imported into the data set by PrimeThought Software Solutions.

This is an advanced tab in terms of managing postal codes.

The only item of importance here is that the PO Box expression can be amended, should your postal code fields have different characters than is usual in your particular address data set.

Items to ignore



You can ignore certain items in your address such as shop, room, floor, building, and so forth to make your results more accurate.

This is set up in the above tab using regular expressions. Using regular expressions is described in the next section.

Regular Expressions

Regular Expression Language Elements:

A regular expression is a pattern that the regular expression engine attempts to match in input text. A pattern consists of one or more character literals, operators, or constructs.

Each section in this quick reference lists a particular category of characters, operators, and constructs that you can use to define regular expressions:

Character Escapes

The backslash character (\) in a regular expression indicates that the character that follows it either is a special character (as shown in the following table), or should be interpreted literally.

Escaped character	Description	Pattern	Matches
\a	Matches a bell character, \u0007.	\a	"\u0007" in "Error!" + '\u0007'
\b	In a character class, matches a backspace, \u0008.	[\b]{3,}	"\b\b\b\b" in "\b\b\b\b"
\t	Matches a tab, \u0009.	(\w+)\t	"item1\t", "item2\t" in "item1 \titem2\t"

\r	Matches a carriage return, \u000D. (\r is not equivalent to the newline character, \n.)	\r\n(\w+)	"\r\nThese" in "\r\nThese are\ntwo lines."
\v	Matches a vertical tab, \u000B.	[\v]{2,}	"\v\v\v" in "\v\v\v"
\f	Matches a form feed, \u000C.	[\f]{2,}	"\f\f\f" in "\f\f\f"
\n	Matches a new line, \u000A.	\r\n(\w+)	"\r\nThese" in "\r\nThese are\ntwo lines."
\e	Matches an escape, \u001B.	\e	"\x001B" in "\x001B"
\nnn	Uses octal representation to specify a character (nnn consists of up to three digits).	\w\040\w	"a b", "c d" in "a bc d"
\xnn	Uses hexadecimal representation to specify a character (nn consists of exactly two digits).	\w\x20\w	"a b", "c d" in "a bc d"
\cX \cx	Matches the ASCII control character that is specified by X or x, where X or x is the letter of the control character.	\cC	"\x0003" in "\x0003" (Ctrl-C)
\unnnn	Matches a Unicode character by using hexadecimal representation (exactly four digits, as represented by nnnn).	\w\u0020\w	"a b", "c d" in "a bc d"
\	When followed by a character that is not recognized as an escaped character in this and other tables in this topic, matches that character. For example, * is the same as \x2A. This allows the regular expression engine to disambiguate language elements (such as * or ?) and character literals (represented by * or \?).	\d+[\+-x*]\d+ \d+[\+-x*\d+	"2+2" and "3*9" in "(2+2) * 3*9"

Character Classes

A character class matches any one of a set of characters. Character classes include the language elements listed in the following table.

Character class	Description	Pattern	Matches
[character_group]	Matches any single character in character_group. By default, the match is case-sensitive.	[ae]	"a" in "gray" "a", "e" in "lane"
[^character_group]	Negation: Matches any single character that is not in character_group. By default, characters in character_group are case-sensitive.	[^aei]	"r", "g", "n" in "reign"
[first-last]	Character range: Matches any single character in the range from first to last.	[A-Z]	"A", "B" in "AB123"
.	Wildcard: Matches any single character except \n.	a.e	"ave" in "nave"

			"ate" in "water"
\p{name}	Matches any single character in the Unicode general category or named block specified by name.	\p{Lu} \p{IsCyrillic}	"C", "L" in "City Lights" "Д", "Ж" in "ДЖем"
\P{name}	Matches any single character that is not in the Unicode general category or named block specified by name.	\P{Lu} \P{IsCyrillic}	"i", "t", "y" in "City" "e", "m" in "ДЖем"
\w	Matches any word character.	\w	"I", "D", "A", "1", "3" in "ID A1.3"
\W	Matches any non-word character.	\W	" ". "." in "ID A1.3"
\s	Matches any white-space character.	\w\s	"D " in "ID A1.3"
\S	Matches any non-white-space character.	\s\S	" _" in "int __ctr"
\d	Matches any decimal digit.	\d	"4" in "4 = IV"
\D	Matches any non-decimal digit.	\D	" ", "=", " ", "I", "V" in "4 = IV"

Anchors

Anchors, or atomic zero-width assertions, cause a match to succeed or fail depending on the current position in the string, but they do not cause the engine to advance through the string or consume characters. The metacharacters listed in the following table are anchors.

Assertion	Description	Pattern	Matches
^	The match must start at the beginning of the string or line.	^\d{3}	"901-" in "901-333-"
$	The match must occur at the end of the string or before \n at the end of the line or string.	-\d{3}$	"-333" in "-901-333"
\A	The match must occur at the start of the string.	\A\d{3}	"901-" in "901-333-"
\Z	The match must occur at the end of the string or before \n at the end of the string.	-\d{3}\Z	"-333" in "-901-333"
\z	The match must occur at the end of the string.	-\d{3}\z	"-333" in "-901-333"
\G	The match must occur at the point where the previous match ended.	\G\(\d\)	"(1)", "(3)", "(5)" in "(1)(3)(5)[7](9)"
\b	The match must occur on a boundary between a \w (alphanumeric) and a \W (nonalphanumeric)	\b\w+\s\w+\b	"them them" in "them theme them them"

	character.		
\B	The match must not occur on a \b boundary.	\Bend\w*\b	"ends", "ender" in "end sends endure lender"

Grouping Constructs

Grouping constructs delineate subexpressions of a regular expression and typically capture substrings of an input string. Grouping constructs include the language elements listed in the following table.

Grouping construct	Description	Pattern	Matches
(subexpression)	Captures the matched subexpression and assigns it a zero-based ordinal number.	(\w)\1	"ee" in "deep"
(?<name>subexpression)	Captures the matched subexpression into a named group.	(?<double>\w)\k<double>	"ee" in "deep"
(?<name1-name2>subexpression)	Defines a balancing group definition.	(((?'Open'\()[^\(\)]*)+((?'Close-Open'\))[^\(\)]*)+)*(?(Open)(?!))$	"((1-3)*(3-1))" in "3+2^((1-3)*(3-1))"
(?:subexpression)	Defines a noncapturing group.	Write(?:Line)?	"WriteLine" in "Console.WriteLine()"
(?imnsx-imnsx:subexpression)	Applies or disables the specified options within subexpression.	A\d{2}(?i:\w+)\b	"A12xI", "A12XL" in "A12xI A12XL a12xI"
(?=subexpression)	Zero-width positive lookahead assertion.	\w+(?=\.)	"is", "ran", and "out" in "He is. The dog ran. The sun is out."
(?!subexpression)	Zero-width negative lookahead assertion.	\b(?!un)\w+\b	"sure", "used" in "unsure sure unity used"
(?<=subexpression)	Zero-width positive lookbehind assertion.	(?<=19)\d{2}\b	"99", "50", "05" in "1851 1999 1950 1905 2003"
(?<!subexpression)	Zero-width negative lookbehind assertion.	(?<!19)\d{2}\b	"51", "03" in "1851 1999 1950 1905 2003"
(?>subexpression)	Nonbacktracking (or "greedy") subexpression.	[13579](?>A+B+)	"1ABB", "3ABB", and "5AB" in "1ABB 3ABBC 5AB 5AC"

Quantifiers

A quantifier specifies how many instances of the previous element (which can be a character, a group, or a character class) must be present in the input string for a match to occur. Quantifiers include the language elements listed in the following table.

Quantifier	Description	Pattern	Matches

*	Matches the previous element zero or more times.	\d*\.\d	".0", "19.9", "219.9"
+	Matches the previous element one or more times.	"be+"	"bee" in "been", "be" in "bent"
?	Matches the previous element zero or one time.	"rai?n"	"ran", "rain"
{n}	Matches the previous element exactly n times.	",\d{3}"	",043" in "1,043.6", ",876", ",543", and ",210" in "9,876,543,210"
{n,}	Matches the previous element at least n times.	"\d{2,}"	"166", "29", "1930"
{n,m}	Matches the previous element at least n times, but no more than m times.	"\d{3,5}"	"166", "17668" "19302" in "193024"
*?	Matches the previous element zero or more times, but as few times as possible.	\d*?\.\d	".0", "19.9", "219.9"
+?	Matches the previous element one or more times, but as few times as possible.	"be+?"	"be" in "been", "be" in "bent"
??	Matches the previous element zero or one time, but as few times as possible.	"rai??n"	"ran", "rain"
{n}?	Matches the preceding element exactly n times.	",\d{3}?"	",043" in "1,043.6", ",876", ",543", and ",210" in "9,876,543,210"
{n,}?	Matches the previous element at least n times, but as few times as possible.	"\d{2,}?"	"166", "29", "1930"
{n,m}?	Matches the previous element between n and m times, but as few times as possible.	"\d{3,5}?"	"166", "17668" "193", "024" in "193024"

Backreference Constructs

A backreference allows a previously matched subexpression to be identified subsequently in the same regular expression. The following table lists the backreference constructs supported by regular expressions.

Backreference construct	Description	Pattern	Matches
\number	Backreference. Matches the value of a numbered subexpression.	(\w)\1	"ee" in "seek"
\k<name>	Named backreference. Matches the value of a named expression.	(?<char>\w)\k<char>	"ee" in "seek"

Alternation Constructs

Alternation constructs modify a regular expression to enable either/or matching. These constructs include the language elements listed in the following table.

Alternation construct	Description	Pattern	Matches
|	Matches any one element separated by the vertical bar (|) character.	th(e|is|at)	"the", "this" in "this is the day. "
(?(expression)yes|no)	Matches yes if expression matches; otherwise, matches the optional no part. expression is interpreted as a zero-width assertion.	(?(A)A\d{2}\b|\b\d{3}\b)	"A10", "910" in "A10 C103 910"
(?(name)yes|no)	Matches yes if the named capture name has a match; otherwise, matches the optional no.	(?<quoted>")?(?(quoted).+?"|\S+\s)	Dogs.jpg, "Yiska playing.jpg" in "Dogs.jpg "Yiska playing.jpg""

Substitutions

Substitutions are regular expression language elements that are supported in replacement patterns. The metacharacters listed in the following table are atomic zero-width assertions.

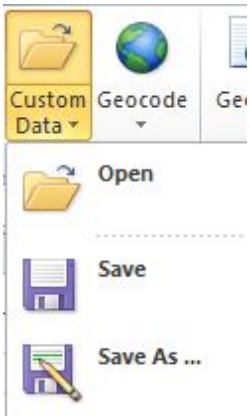
Character	Description	Pattern	Replacement pattern	Input string	Result string
$number	Substitutes the substring matched by group number.	\b(\w+)(\s)(\w+)\b	$3$2$1	"one two"	"two one"
${name}	Substitutes the substring matched by the named group name.	\b(?<word1>\w+)(\s)(?<word2>\w+)\b	${word2} ${word1}	"one two"	"two one"
$$	Substitutes a literal "$".	\b(\d+)\s?USD	$$$1	"103 USD"	"$103"
$&	Substitutes a copy of the whole match.	(\$*(\d*(\.+\d+)?){1})	**$&	"$1.30"	"**$1.30**"
$`	Substitutes all the text of the input string before the match.	B+	$`	"AABBCC"	"AAAACC"
$'	Substitutes all the text of the input string after the match.	B+	$'	"AABBCC"	"AACCCC"
$+	Substitutes the last group that was captured.	B+(C+)	$+	"AABBCCDD"	AACCDD
$_	Substitutes the entire input string.	B+	$_	"AABBCC"	"AAAABBCCCC"

Miscellaneous Constructs

Miscellaneous constructs either modify a regular expression pattern or provide information about it. The following table lists the miscellaneous constructs supported.

Construct	Definition	Example
(?imnsx-imnsx)	Sets or disables options such as case insensitivity in the middle of a pattern.	\bA(?i)b\w+\b matches "ABA", "Able" in "ABA Able Act"
(?#comment)	Inline comment. The comment ends at the first closing parenthesis.	\bA(?#Matches words starting with A)\w+\b
# [to end of line]	X-mode comment. The comment starts at an unescaped # and continues to the end of the line.	(?x)\bA\w+\b#Matches words starting with A

Custom Data



You can set up parameters and aliases and save them in your own custom file.

For instance you can set up a road centric set and save it as a gcc file or you can set up a suburb centric data settings set and save that as a gcc and flip between them to handle different types of data sets.

As an example we have set up two different sets: one for street centric data and one for town centric data (rural areas with no or bad street names).

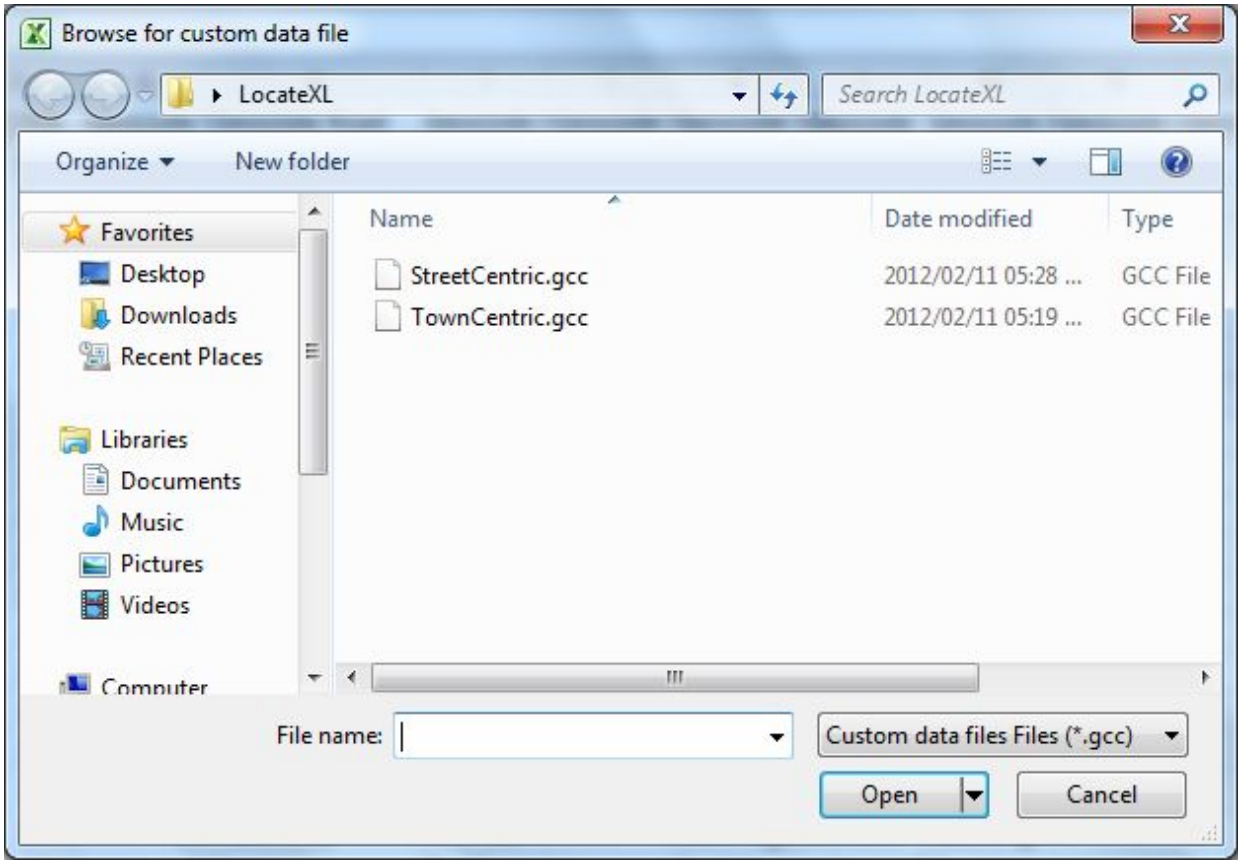
After setting up the data settings and testing them, we saved each set as a separate GCC file.

Then, when working with good road data, one would use the RoadCentric.gcc file, and when working with less than great road data, one would load and work with TownCentric.gcc.

You could also save your own set of aliases for every different address part and save these in a particular gcc file.

Open

This you use when you have an already saved gcc file that you would like to use.



Save

You can save the current gcc file that you are working with by clicking save.

Save As

You can save as to create a newly named gcc file.

LocateXL Ribbon 9

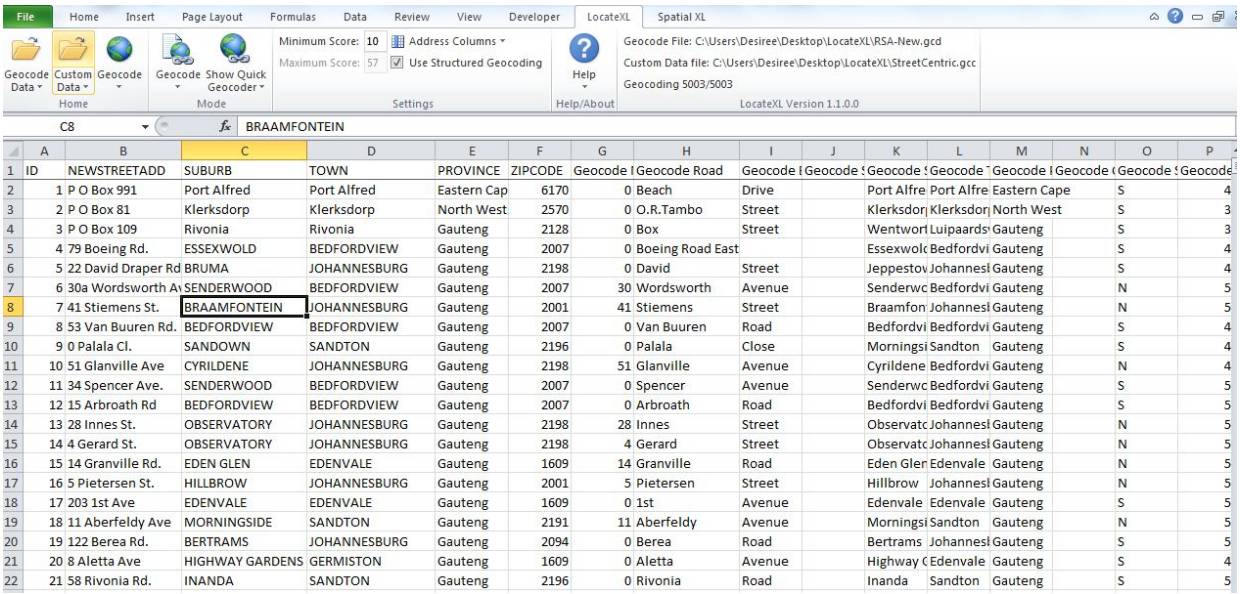
Geocode

This is the button you use for geocoding and it gives different options.

Click on a button to show more information about that.

Locate All

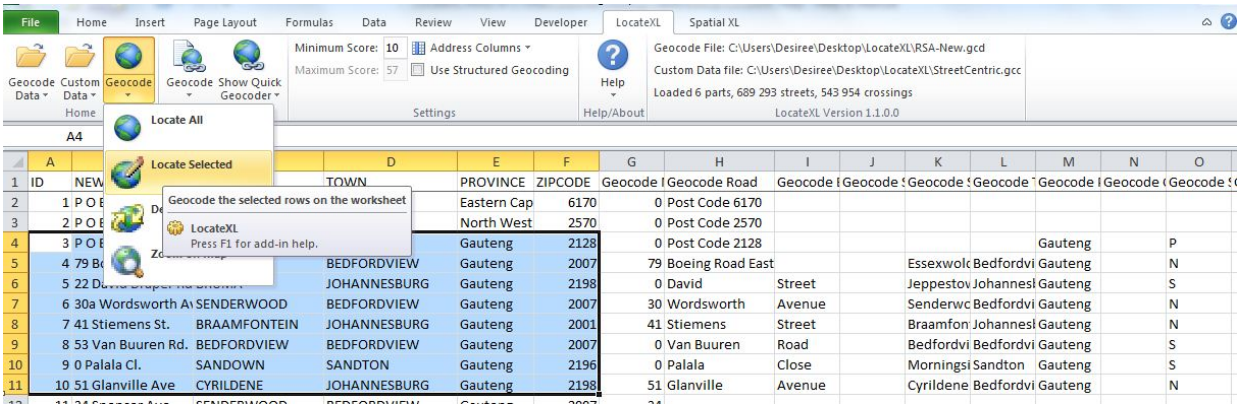
Locate All will locate all of the records on the current spreadsheet. The information section on the ribbon will show the progress.



	ID	NEWSTREETADD	SUBURB	TOWN	PROVINCE	ZIPCODE	Geocode	Geocode Road	Geocode	Geocode	Geocode	Geocode	Geocode	Geocode	Geocode	Geocode
2	1	P O Box 991	Port Alfred	Port Alfred	Eastern Cap	6170	0	Beach	Drive		Port Alfre	Port Alfre	Eastern Cape		S	4
3	2	P O Box 81	Klerksdorp	Klerksdorp	North West	2570	0	O.R.Tambo	Street		Klerksdor	Klerksdor	North West		S	3
4	3	P O Box 109	Rivonia	Rivonia	Gauteng	2128	0	Box	Street		Wentwort	Luipaards	Gauteng		S	3
5	4	79 Boeing Rd.	ESSEXWOLD	BEDFORDVIEW	Gauteng	2007	0	Boeing Road East			Essexwol	Bedfordvi	Gauteng		S	4
6	5	22 David Draper Rd	BRUMA	JOHANNESBURG	Gauteng	2198	0	David	Street		Jeppestov	Johannesl	Gauteng		S	4
7	6	30a Wordsworth A	SENDERWOOD	BEDFORDVIEW	Gauteng	2007	30	Wordsworth	Avenue		Senderwo	Bedfordvi	Gauteng		N	5
8	7	41 Stiemens St.	BRAAMFONTEIN	JOHANNESBURG	Gauteng	2001	41	Stiemens	Street		Braamfon	Johannesl	Gauteng		N	5
9	8	53 Van Buuren Rd.	BEDFORDVIEW	BEDFORDVIEW	Gauteng	2007	0	Van Buuren	Road		Bedfordvi	Bedfordvi	Gauteng		S	4
10	9	0 Palala Cl.	SANDOWN	SANDTON	Gauteng	2196	0	Palala	Close		Morningsi	Sandton	Gauteng		S	4
11	10	51 Glanville Ave	CYRILDENE	JOHANNESBURG	Gauteng	2198	51	Glanville	Avenue		Cyrildene	Bedfordvi	Gauteng		N	4
12	11	34 Spencer Ave.	SENDERWOOD	BEDFORDVIEW	Gauteng	2007	0	Spencer	Avenue		Senderwo	Bedfordvi	Gauteng		S	5
13	12	15 Arbroath Rd	BEDFORDVIEW	BEDFORDVIEW	Gauteng	2007	0	Arbroath	Road		Bedfordvi	Bedfordvi	Gauteng		S	5
14	13	28 Innes St.	OBSERVATORY	JOHANNESBURG	Gauteng	2198	28	Innes	Street		Observato	Johannesl	Gauteng		N	5
15	14	4 Gerard St.	OBSERVATORY	JOHANNESBURG	Gauteng	2198	4	Gerard	Street		Observato	Johannesl	Gauteng		N	5
16	15	14 Granville Rd.	EDEN GLEN	EDENVALE	Gauteng	1609	14	Granville	Road		Eden Glen	Edenvale	Gauteng		N	5
17	16	5 Pietersen St.	HILLBROW	JOHANNESBURG	Gauteng	2001	5	Pietersen	Street		Hillbrow	Johannesl	Gauteng		N	5
18	17	203 1st Ave	EDENVALE	EDENVALE	Gauteng	1609	0	1st	Avenue		Edenvale	Edenvale	Gauteng		S	5
19	18	11 Aberfeldy Ave	MORNINGSIDE	SANDTON	Gauteng	2191	11	Aberfeldy	Avenue		Morningsi	Sandton	Gauteng		N	5
20	19	122 Berea Rd.	BERTRAMS	JOHANNESBURG	Gauteng	2094	0	Berea	Road		Bertrams	Johannesl	Gauteng		S	5
21	20	8 Aletta Ave	HIGHWAY GARDENS	GERMISTON	Gauteng	1609	0	Aletta	Avenue		Highway C	Edenvale	Gauteng		S	4
22	21	58 Rivonia Rd.	INANDA	SANDTON	Gauteng	2196	0	Rivonia	Road		Inanda	Sandton	Gauteng		S	5

Locate Selected

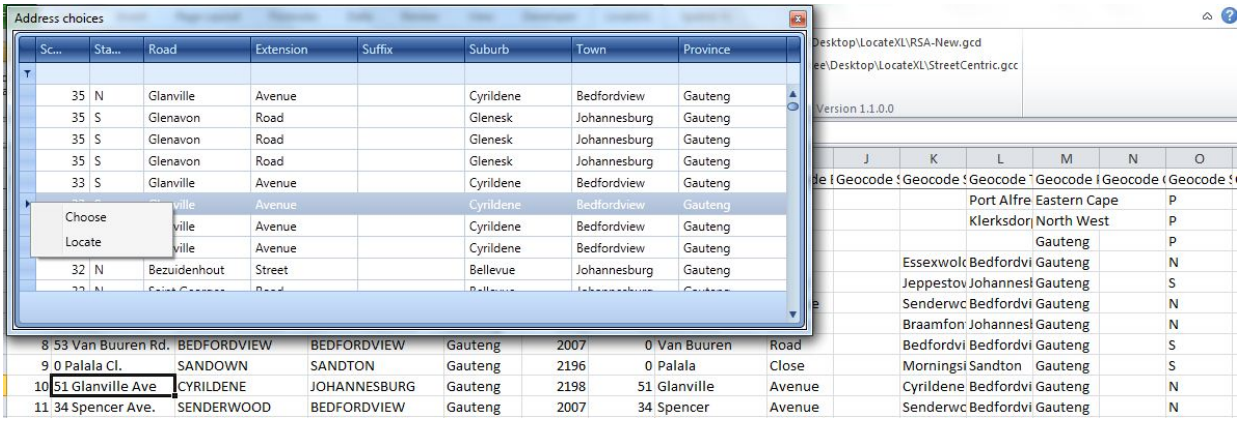
Will locate whatever row that the cursor is on, or if you select multiple rows, will locate the address in those rows.



Detailed Locations

This will get the detailed locations of the current selected row, and will give various searchable options of which one can choose to improve results. You can get this by clicking the button on the ribbon or right clicking on the row and choosing Get detailed locations.

Then by going through the results you can choose a different result.



Zoom on map

To zoom on map you follow these steps

1. First open up the spatial pane in SpatialXL.
2. Then make sure your projection is set right.
3. Then load Bing maps for a background.
4. If you want to see a cross hair, you can set that up.
5. Then zoom on map as shown below.

Now you can zoom to a particular area by either right clicking on a particular address line and clicking zoom to map or placing your cursor on the line and clicking zoom to map on the ribbon.

LocateXL Ribbon

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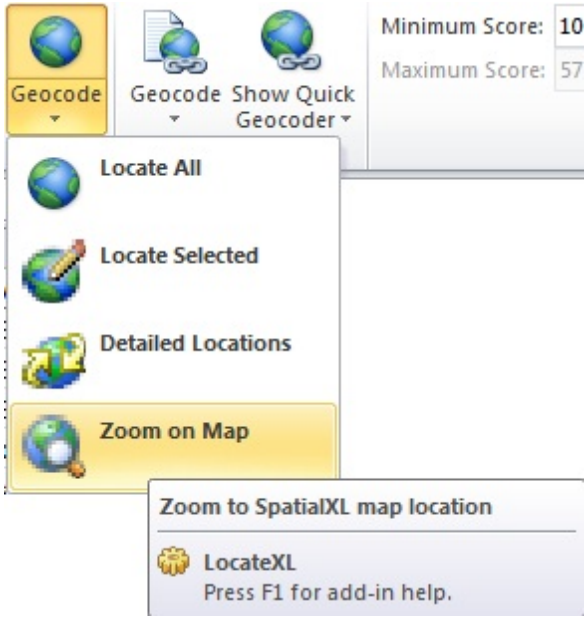
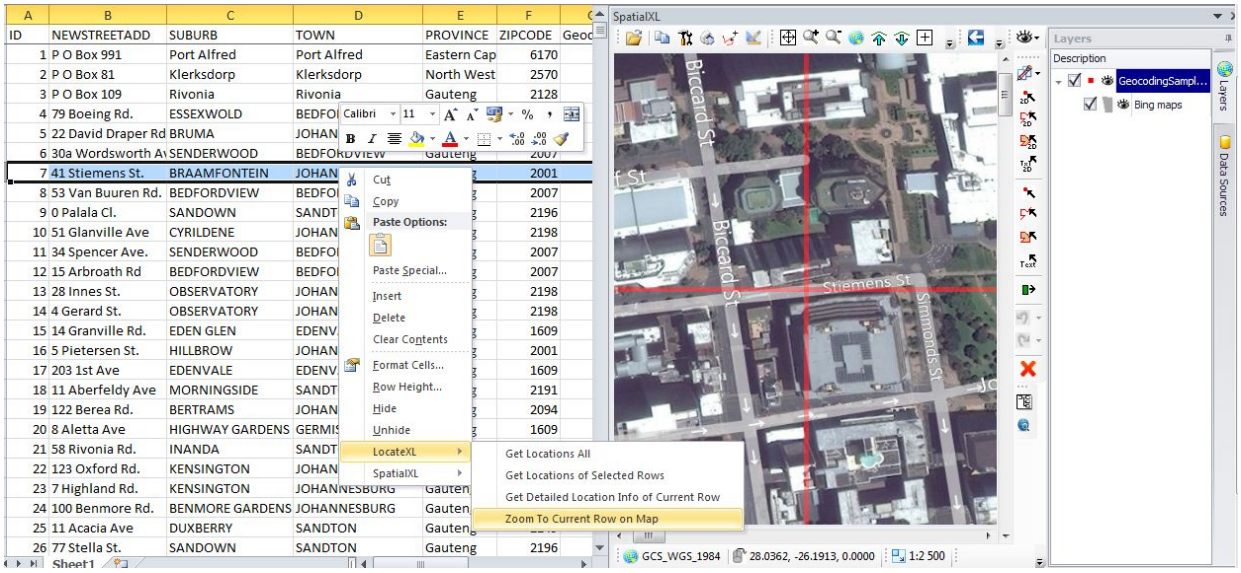




If you want to zoom out slightly, click in the middle of the crosshair and roll your mousewheel back.

Open up Spatial Pane

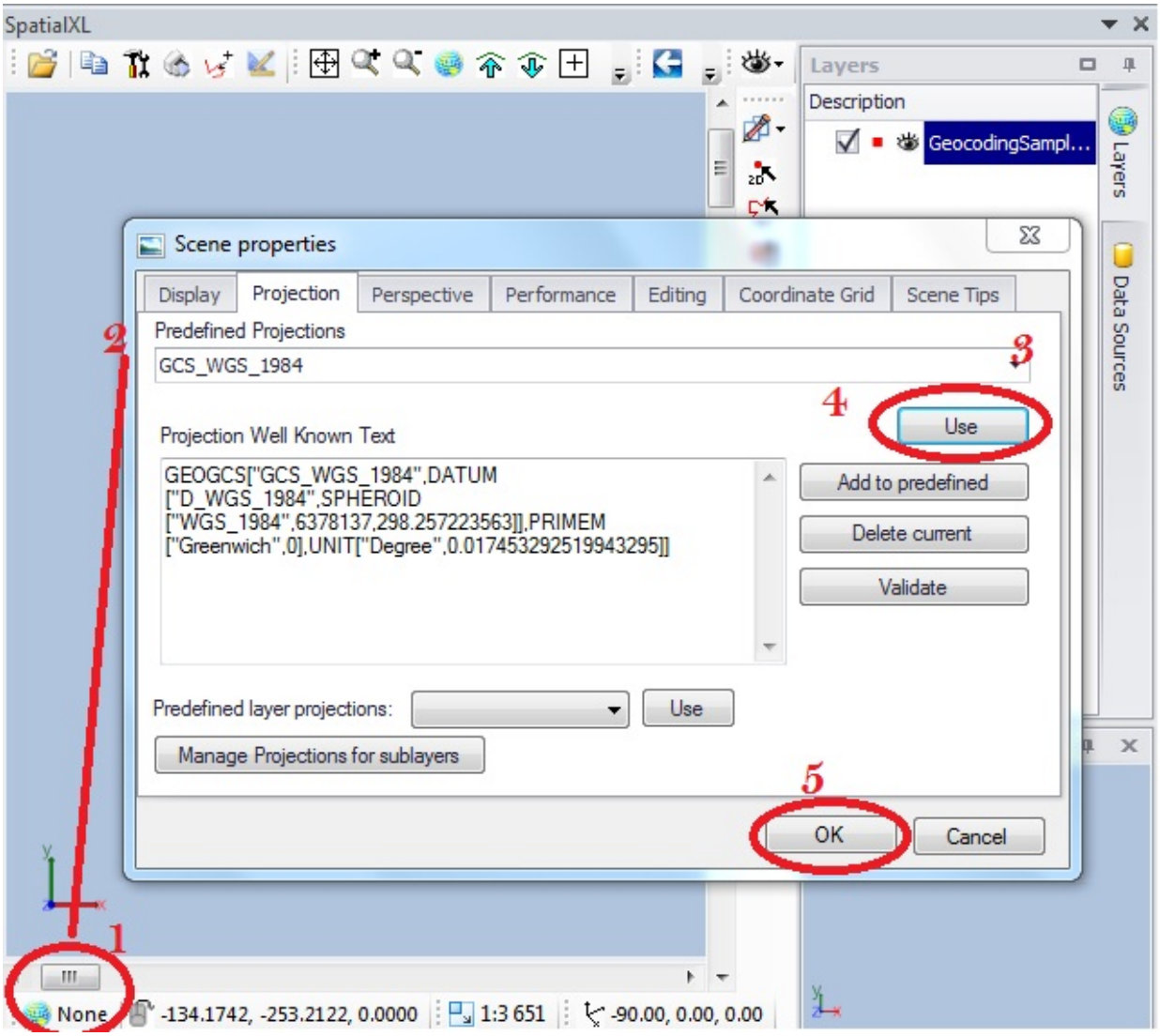
1. First go the the SpatialXL ribbon in Excel.
2. Then click on Show Spatial Pane. You can show it floating or docked.

Set scene projection

Once the Spatial Pane is showing, set the scene projection if it is not correct to WGS 84.

To do this you do the following:

1 First double click on the scene projection area.
2 Then the Scene properties dialog opens.
3 Then click the drop down of the Predefined Projections.
4 Then choose GCS_WGS_1984 from the drop down list.
5 Then click Use.
6 Then click OK.



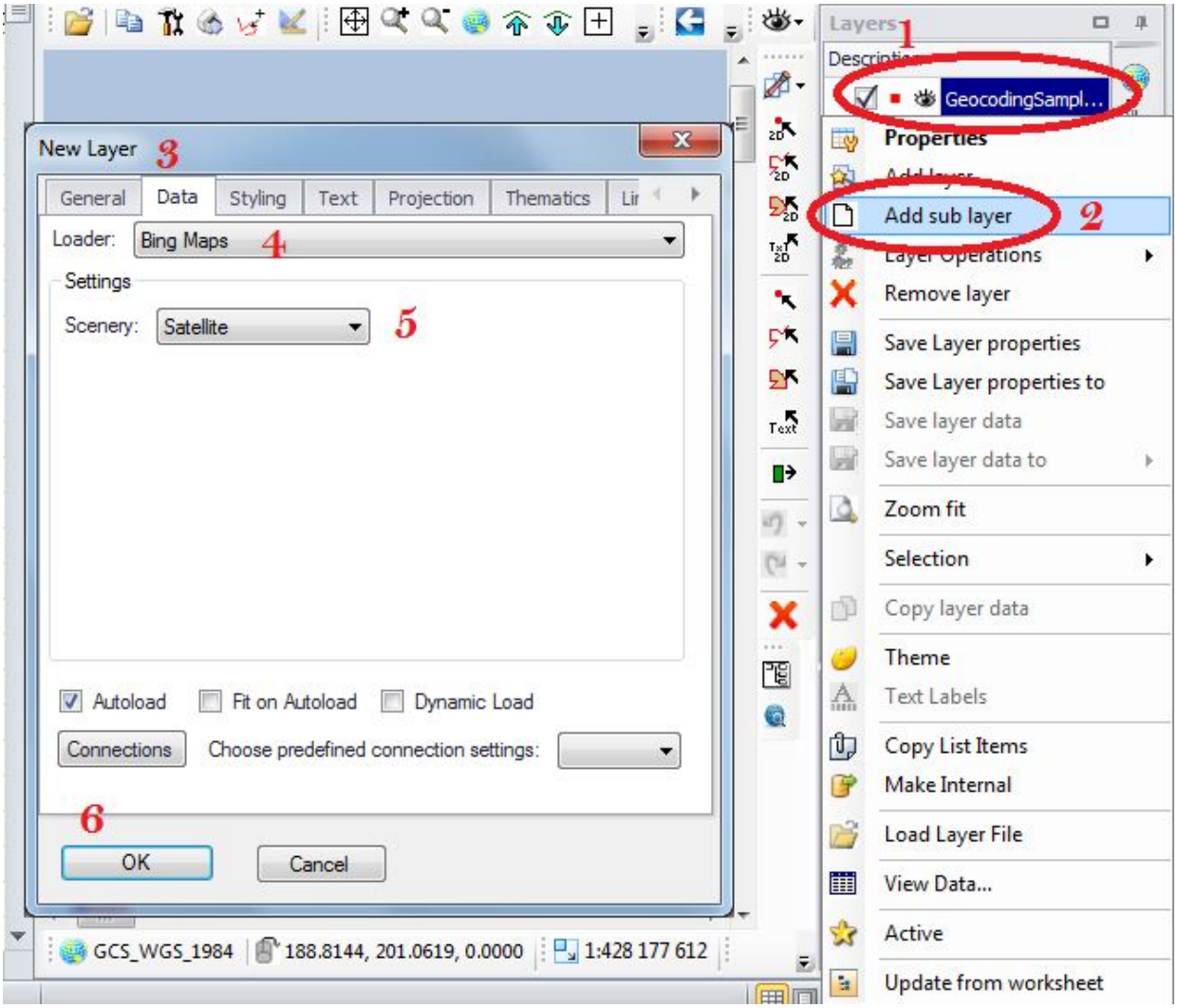
Load background map layer

In this instance we will load bing maps as a background layer.

1. First right click on the workbook containing layer
2. and choose Add Sub Layer.

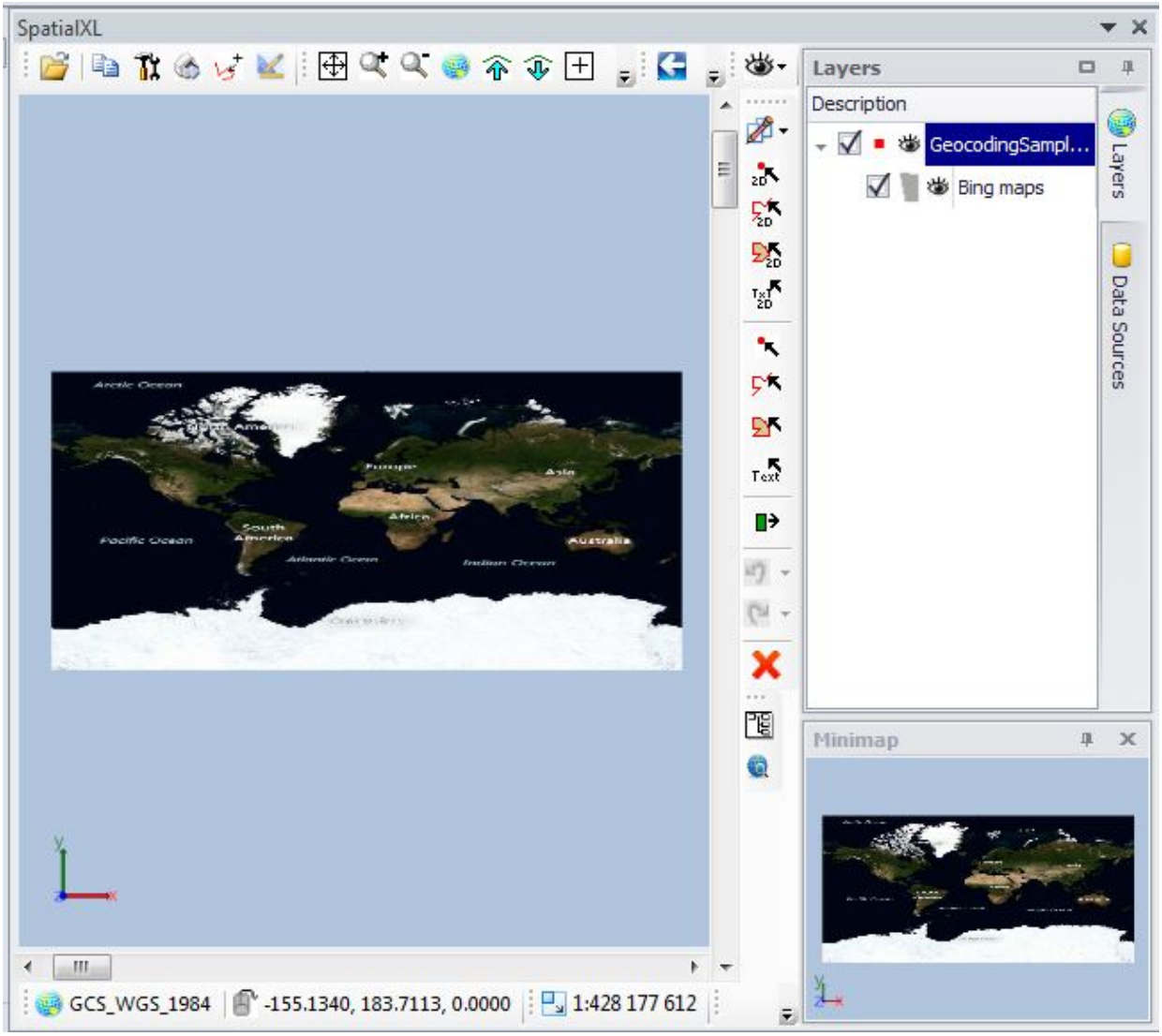
(alternatively if you did not have a current open spreadsheet, you could simply right click in the Layer area and choose Add Layer instead of Add Sub Layer)

3. Then in the New Layer dialog, go to the Data tab and
4. Choose Bing Maps in the Loader area.
5. You can choose either Satellite or Roads and then
6. Click OK.



This is what the map will look like if you have loaded bing maps.

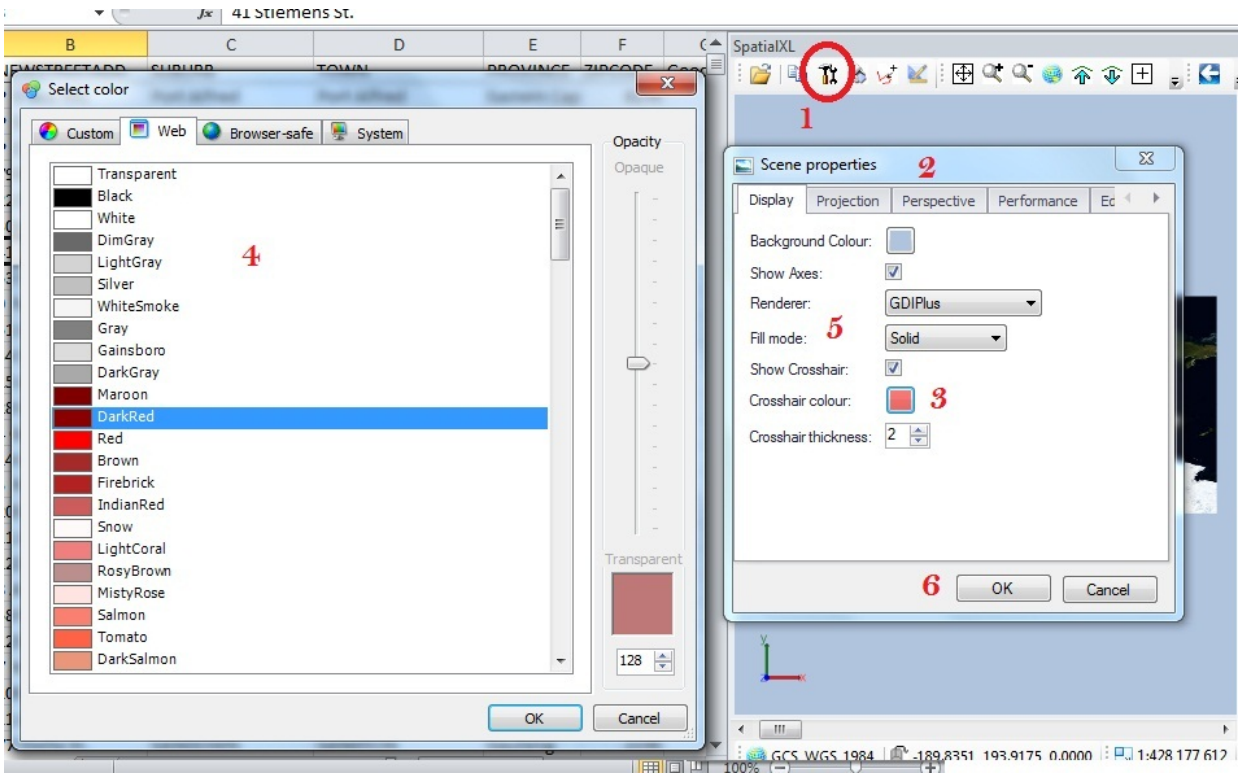
You can also right click on the Bing maps layer and select Zoom fit from the menu, if you don't see the map.

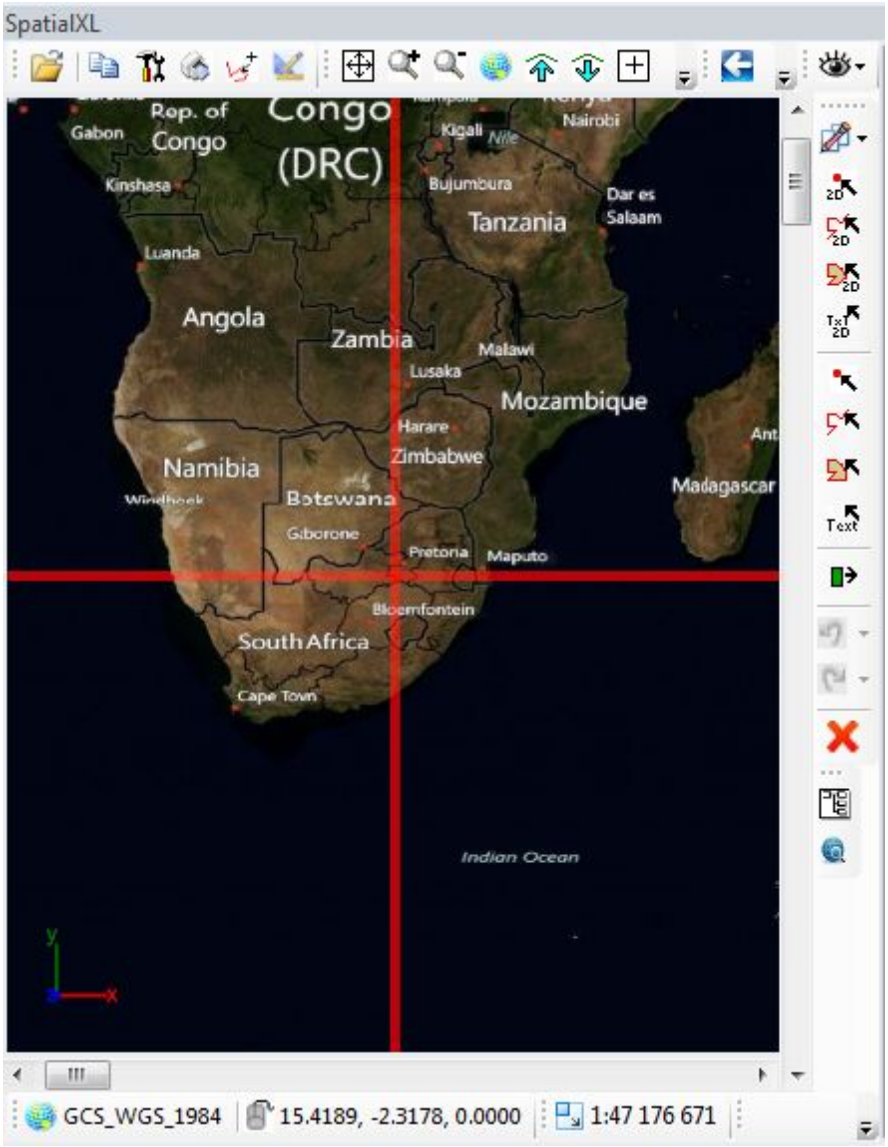


Crosshair

If you want to display a cross hair on the map, you follow the following steps:

1. Go to the settings button in the spatial area and double click.
2. In the Scene Properties
3. Set the Cross Hair colour, by double clicking and then
4. Set it in the Select colour dialog.
5. Then choose to Show Crosshair, make sure the renderer is GDI plus and choose the crosshair thickness.
6. Click OK.


Select color
Custom
Web
Browser-safe
System
Transparent
Black
White
DimGray
LightGray
Silver
WhiteSmoke
Gray
Gainsboro
DarkGray
Maroon
DarkRed
Red
Brown
Firebrick
IndianRed
Snow
LightCoral
RosyBrown
MistyRose
Salmon
Tomato
DarkSalmon
4
Opacity
Opaque
Transparent
128
OK
Cancel
SpatialXL
1
Scene properties
2
Display
Projection
Perspective
Performance
Background Colour:
Show Axes:
Renderer:
GDIPlus
Fill mode:
5
Solid
Show Crosshair:
Crosshair colour:
3
Crosshair thickness:
2
6
OK
Cancel



Geocode or Reverse Geocode

This flips between Geocode and Reverse Geocode.

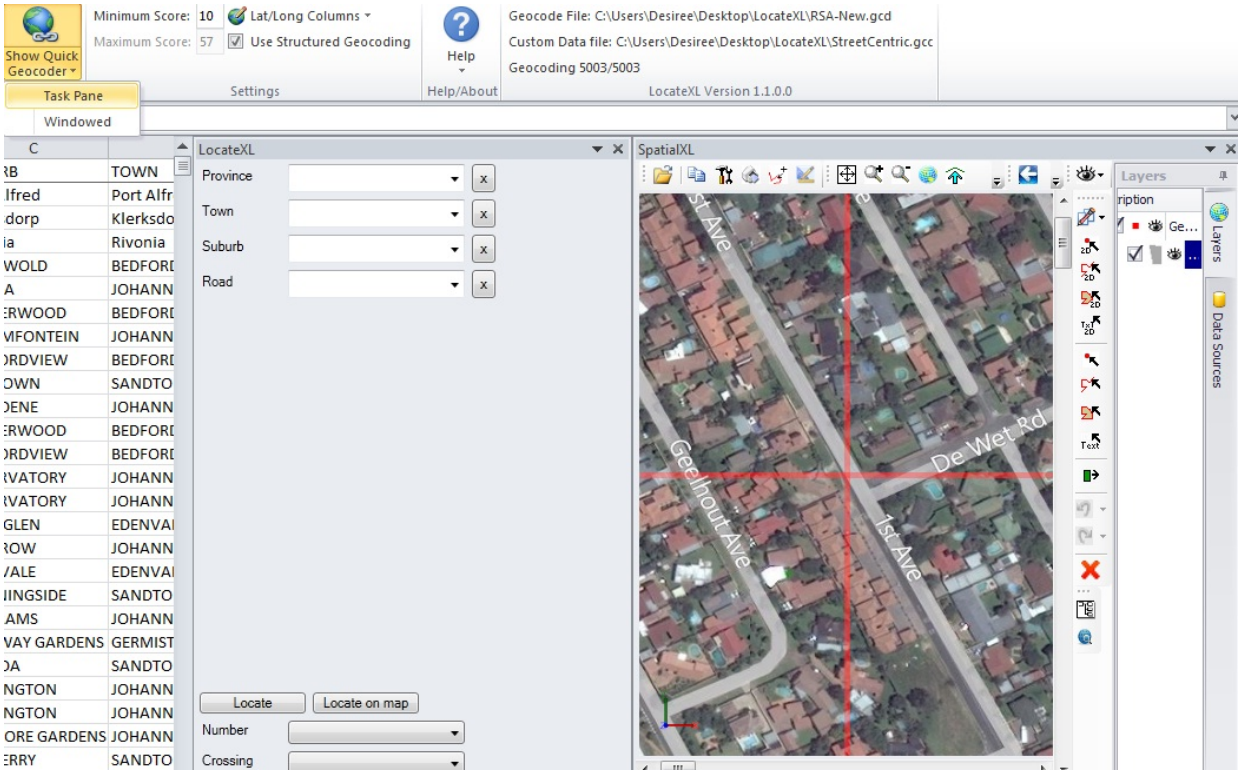
Quick Geocoder

The quick geocoder can come up docked as a task pane inside Excel or floating as a window.

For more information on the quick geocoder, look at the Quick Geocoder section.

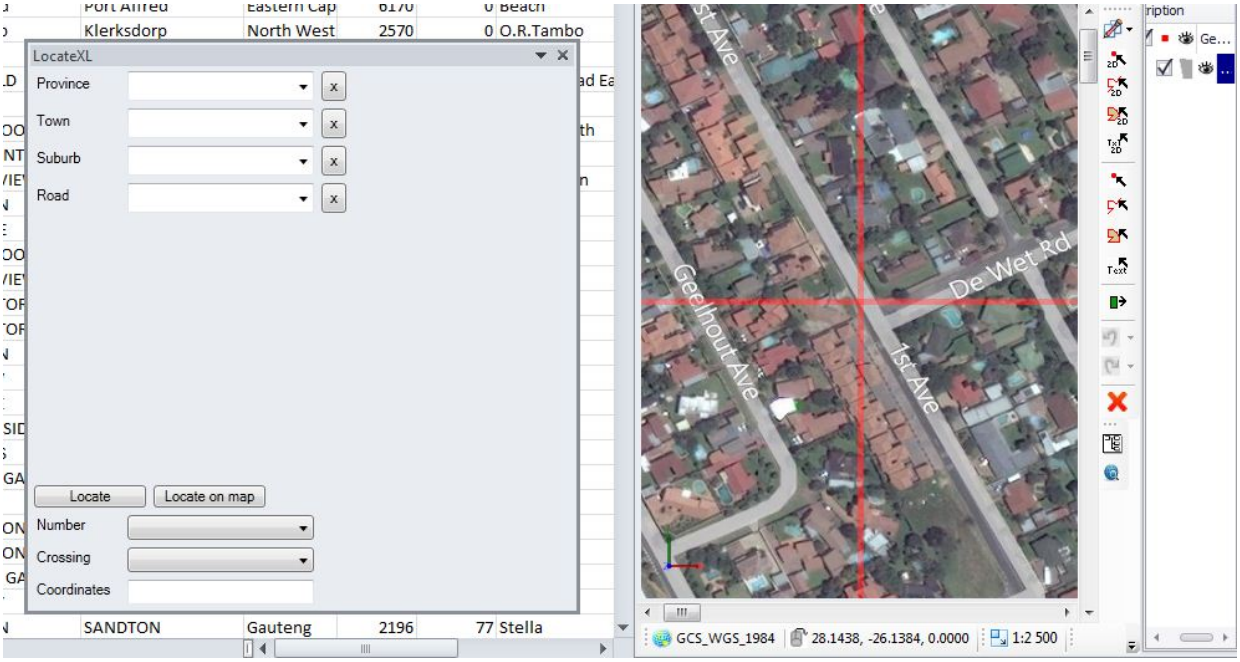
Task pane

This will open the quick geocoder as a task pane and dock it inside Excel. For more information look at the Quick Geocoder section.

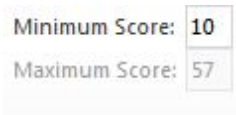


Windowed

This will show the quick geocoder as a floating window. For more information have a look at the Quick Geocoder section.



Score



The minimum and maximum score is also displayed for ease of reference on the LocateXL ribbon.

You can also change the minimum score directly on the ribbon.

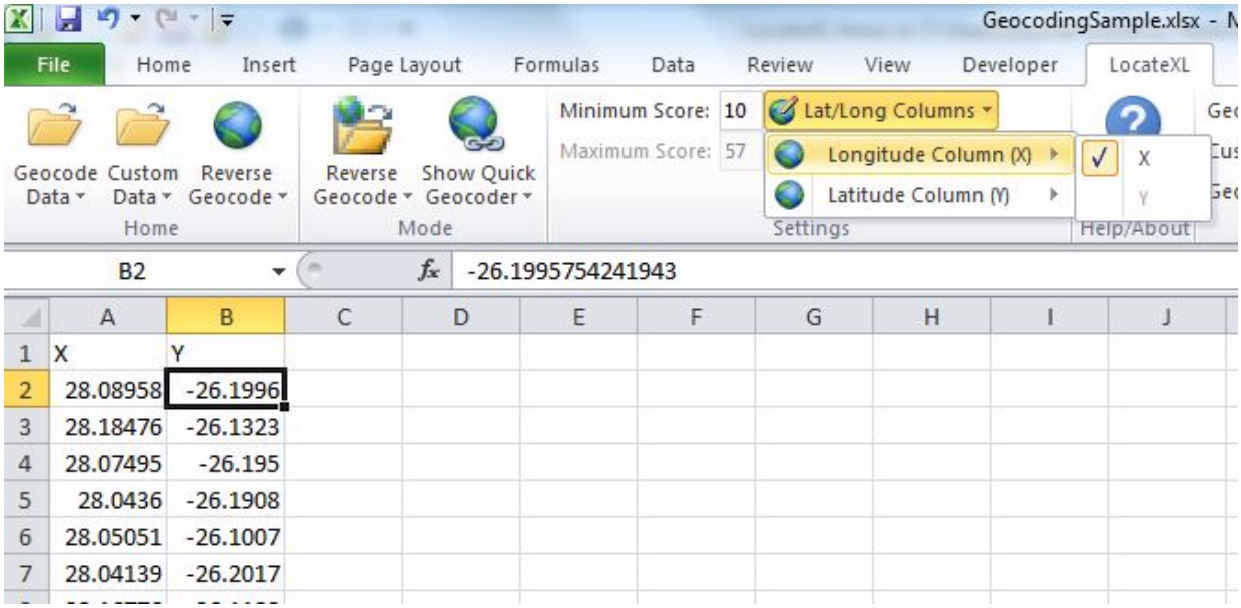
How these scores are calculated is further discussed in the Parameters section.

Address Columns

Address columns are applicable to the following:

1. Reverse Geocode

The address columns for the reverse geocode is where you choose the Lat/Long columns.



2. Structured Batch Geocode.
With a structured geocoder, you choose each column to be an exact match.

3. Unstructured Batch Geocode.

With an unstructured batch geocode, the data that you are geocoding is not exactly placed per column in the data, the suburbs and towns might be mixed up, or the towns and provinces might be mixed up. Therefore there is not a structured approach, but an approach of putting together each row, adding the columns together and working through each address working out more possible options for the best match. Unstructured geocodes are slower than structured, but it is very workable where cleaning data would be very time consuming and tedious to still get a good result.

With an unstructured geocode, you simply choose each column that you are using in the geocode.

Structured or not

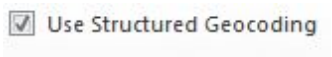
1. Structured Batch Geocode.
With a structured geocoder, you choose each column to be an exact match.

2. Unstructured Batch Geocode.

With an unstructured batch geocode, the data that you are geocoding is not exactly placed per column in the data, the suburbs and towns might be mixed up, or the towns and provinces might be mixed up. Therefore there is not a structured approach, but an approach of putting together each row, adding the columns together and working through each address working out more possible options for the best match. Unstructured geocodes are slower than structured, but it is very workable where cleaning data would be very time consuming and tedious to still get a good result.

More information of how to choose the correct columns are in the Address columns section.

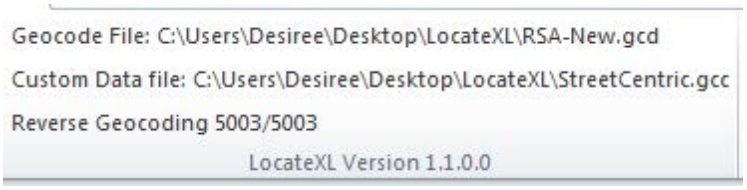
You can tick Structured Geocoding on or off on the LocateXL ribbon.



Help About

In the Help and About section, you get the help documentation and you can also update license information related to SpatialXL.

Information



The information section of the LocateXL ribbon, shows information about the loading progress of the geocode data file, the geocode custom file, the reverse geocoding progress or the geocoding progress, depending on what action you are performing at that particular time.

LocateXL Context Menu

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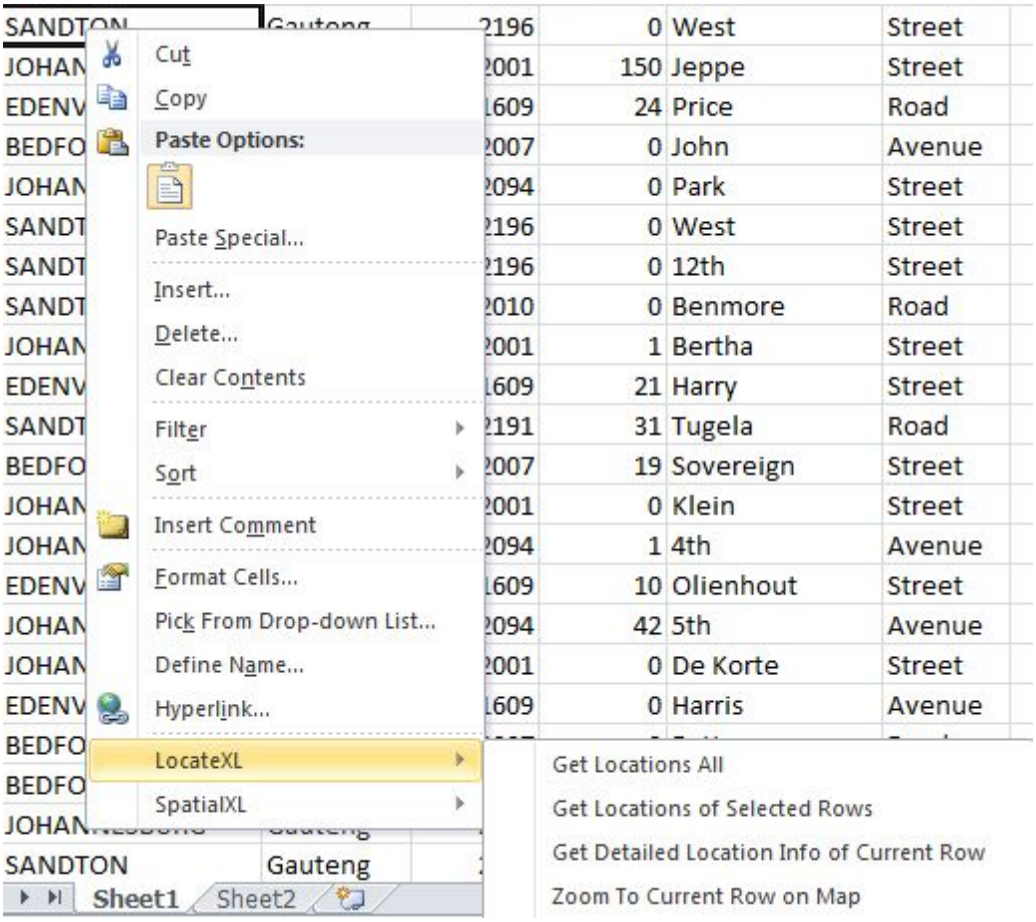
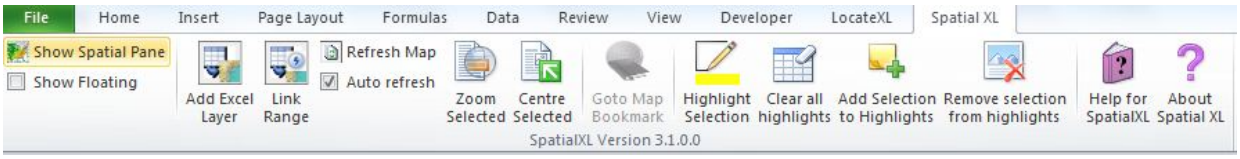


The context menu matches up with functionality in the LocateXL ribbon.

When you right click on a particular row you can

Get Locations of All
Get Locations of Selected Rows
Get Detailed Location Info of Current Row
Zoom to Current Row on Map



Functionality for SpatialXL is fully covered in the Help for SpatialXL section.

However, the basic functionality for geocoding includes the following items:

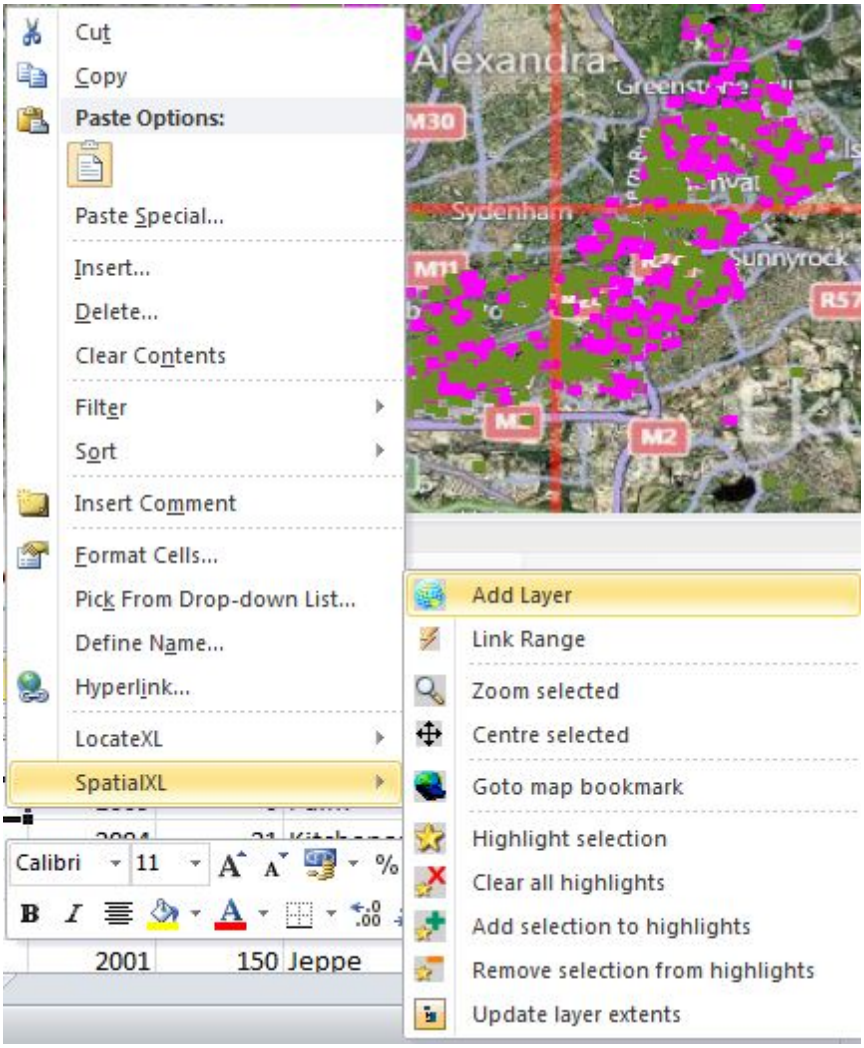
1. First open up the spatial pane in SpatialXL.
2. Then make sure your projection is set right.
3. Then load Bing maps for a background.
4. If you want to see a cross hair, you can set that up.
5. Then zoom on map from the Quick Geocoder or a row in the Spreadsheet after geocoding.

You can also add all of the addresses on a map once you have X and Y locations, but clicking inside the spreadsheet and clicking Add Excel Layer on the Ribbon or right clicking and then SpatialXL > Add Layer.

This will put all of the data on the map.

Now you can do thematics in SpatialXL.
For detailed help on SpatialXL, please visit SpatialXL online help.

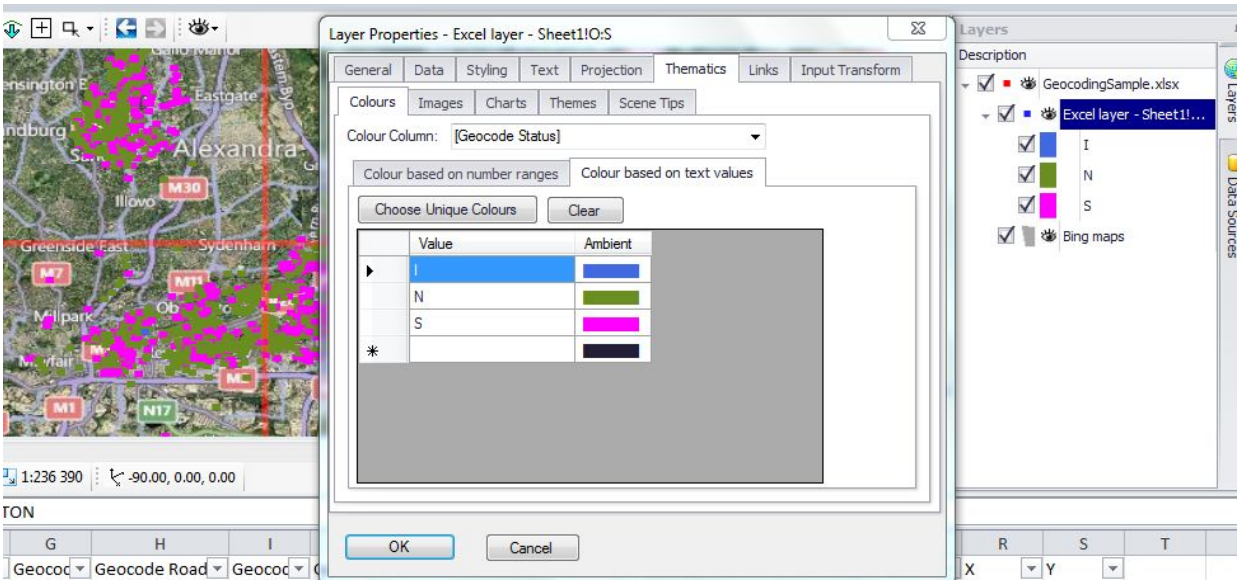
The SpatialXL context menu (right clicking on the spreadsheet row(s)) matches the functionality in the ribbon.



Please note that these menu items will only be effective if the data has been added to the map using the X and Y locations to locate them.

Thereafter you can zoom to selected, center selected, highlight selections and so forth.
Once you have added a layer from the X and Y data in the spreadsheet, you can perform various actions such as thematic colouring and so on.

This is all described fully in the SpatialXL help.



The base data set that is used for LocateXL comes from our data partners, MapIT (www.MapIT.co.za)

This data set is included in the LocateXL product.

The postal codes are currently sourced from a different provider but all the national address registry data used for geocoding and reverse geocoding originates from MapIT.

Our map data partners MapIT provides data for South Africa and African countries depending on the need of the client.

The map data and the cost of map data is included in the price for LocateXL.

TECHNICAL INFORMATION ABOUT LOCATEXL

- LocateXL is an add-in to Excel, and is written using the C# language.
- You need the Microsoft .NET 4 environment on a machine running SpatialXL.
- Admin rights are needed to install LocateXL.
- Standard Microsoft .MSI install procedures are used for the installation.
- Windows XP service pack 3 or above is fine for user machines.
- Requires Excel 2007 or 2010. Will NOT work in Excel 2003.
- The licence is locked to the machine name.
- The software can run on 32 bit or 64 bit versions of Windows.
- You need to have SpatialXL installed to have full functionality in terms of mapping.

TECHNICAL INFORMATION ABOUT SPATIALXL

- SpatialXL is an add-in to Excel, and is written using the C# language.
- You need the Microsoft .NET 4 environment on a machine running SpatialXL.
- Admin rights are needed to install SpatialXL.
- Standard Microsoft .MSI install procedures are used for the installation.
- Windows XP service pack 3 or above is fine for user machines.
- Requires Excel 2007 or 2010. Will NOT work in Excel 2003.
- The licence is locked to the machine name.
- The software can run on 32 bit or 64 bit versions of Windows.

Contact and Support

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For any bugs, support or any type of assistance, please contact us.

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Product website: www.LocateXL.com
Platform product website: www.SpatialXL.com

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